Superfex Refines 3 New Models

CLEVELAND—Three new models, embodying a number of refinements in the refrigerating mechanism and cabinet construction, comprise the 1934 line of Superfex kerosene-burning electric refrigerators recently introduced by Perfection Stove Co. of this city.

The new models have 5, 6, and 8-cu. ft. food storage capacity, respectively, are priced (list f.o.b. Cleveland but not including tax) at $195, $250 and $325.

In operating the Superfex refrigerator the user lights the burner each evening. The burner operates for an hour or two and then automatically shuts off. Having set up a complete refrigeration cycle, it maintains adequate refrigerator temperatures for an entire day.

The Superfex patented burner set, with three burners, is enclosed in a specially designed housing. Burner set is built on a sliding tray, and is kept out of sight except when being fueled or lighted. The housing prevents the transfer of heat from the burners to the food compartment.

A fuel indicator is provided to show the exact amount of kerosene to be used at a burning.

Refrigeration Cycle

The cycle of operation in the Superfex kerosene-burning refrigerators is as follows:

Ammonia is mixed with water in a tank or generator, under which is located a set of specially developed oil burners. These burners are lighted and the heat produced drives the ammonia in vapor form out of the mixture.

The ammonia vapor is forced up through a pipe and through a coil which is immersed in water contained in a tank on top of the refrigerator, where the lower temperature causes the ammonia vapor to change back to a liquid.

This ammonia drops through a pipe into the freezing unit located in the top of the food compartment. This process continues for a relatively short time until the oil is consumed and the burners go out.

Evaporation of Ammonia

Ammonia evaporates at a very low temperature and consequently is vaporized at the temperature of the food compartment. The evaporation produces the refrigerating effect in the food storage compartment.

The water in the generator cools very quickly after the burners have gone out, and as cool water has a strong affinity for ammonia, the ammonia vaporized in the freezing unit in the food compartment, passing back to the generator through a connecting pipe, is readily re-absorbed by the water in the generator, thus completing the cycle.

The Superfex refrigerator can be furnished with gas burners in place of oil burners in order that natural, manufactured or bottled (propane) gas may be used when gas is available and where the customer desires to use it instead of oil.

Larger Condenser Used

A number of refinements in the refrigerating apparatus have been made in this year's models. To improve condenser efficiency in the two larger models, a condenser tank two inches higher and with a greater water capacity is used. An improved method is employed to facilitate attaching and removing the condenser tank cover.

An improved flue construction is also employed. This has been designed to reduce further the possibility of heat transfer from the burner compartment to the cabinet.

Food racks have been improved. They are so constructed that they firmly grip the sides of the food compartment so that tilting under uneven loads is avoided, yet the food compartment remains free of any screws or bolts or other means of fastening the racks, and the racks themselves are readily removed for cleaning.

All Superfex models have two ice cube trays which fit inside the freezing compartment. Each tray holds 1½ lbs. of ice, or 16 cubes. Tray partitions are removable for freezing ice cream or for preparing frozen desserts.

Interior finish of the food compartment is of porcelain with rounded corners and enameled shelf supports.

Exterior finish is an ivory gray lacquer.

Hardware is chromium plated in a modernistic design. The large door is self latching, with sag-proof hinges.

Beyond the Power Lines

Many new features are incorporated in the 1934 Superfex oil burning refrigerator. Tank on top houses the condenser while the burners slide out of the small door at the bottom left-hand corner.

Superfex Specifications

Perfection Stove Co.
Cleveland, Ohio

Model No.	KLP58	KLP65	KLP82
Cabinet Specifications			
Overall dimensions (in.)			
Height	67¾	67⅝	74⅞
Width	36	38½	38¼
Depth	30	30¾	31½
Inside dimensions of liner (in.)			
Height	33½	35⅞	42
Width	17	19	20½
Depth	19¾	20½	21
No. of doors	1	1	1
Storage Capacity			
Net food storage (cu. ft.)	5	6	8
No. of shelves	3	3	3
Total shelf area (sq. ft.)	8.9	11.35	15.5
Ice Cube Trays			
No. of trays	2	2	2
No. of cubes produced	32	32	32
Weight of cubes (lbs.)	3	3	3
Fuel Consumption			
Maximum fuel consumption (pts. per day)	3¾	3¾	4½
Weight, net (lbs.)	515	628	715
Weight, shipping (lbs.)	640	758	855
Price, f.o.b. factory (less taxes)	$195	250	325

Cabinet Materials
Make of cabinet.....Perfection Stove
Material used for frame.....Steel
Finish of shelves .....Tinned

Finish
Cabinet finish (exterior).....Lacquer
Cabinet finish (interior).....Porcelain

Hardware
Finish of hardware.....Chromium

Refrigerant
Refrigerant used .....Ammonia

Control
Make of control.....Perfection Stove
Type of control.....Fuel indicator

Burner
Three-burner oil heater. Burner set built on sliding tray to pull out for fueling and lighting and push back during heating cycle.

Evaporator
Make of evaporator.....Perfection Stove
Evaporator construction .....Tubular
Type of ice trays.....Model KLP-58—aluminum; others—tinned copper

Condenser
Make of condenser.....Perfection Stove
Type of condenser....Tubular submerged in water

Special Features
Food racks grip sides of compartment but are not fastened.

Note: Superfex can be furnished with gas burners in place of oil burners in order to use natural, manufactured, or bottled gas.

Buffalo Refrigeration Show Nets 781 Sales

BUFFALO, N. Y.—Of the 40,000 visitors at the annual refrigeration show held here April 16 to 21, 781 purchased household electric refrigerators at the show or as a result of the show, according to a check-up made by Samuel Vineberg, manager of the Electric League of Niagara Frontier.

The show was sponsored by the league and the refrigeration bureau.

Makes represented at the show included: Apex, Crosley, Frigidaire, General Electric, Gibson, Grunow, Kelvinator, Leonard, Norge, Potter, Stewart-Warner, Sparton, and Westinghouse.

Department Store Selling Discussed At G-E Meeting

(*Concluded from Page 1, Column 2*)

and close contact with market and, particularly, with manufacturers?

How can one maintain the heaviest stocks in the best selling prices?

What percentage of stock is to be carried in the prestige or upper brackets?

Can one limit the number of styles and brands carried at a given price?

Is the advantage of pushing hard and recommending only one line offset by the loss of sales because national advertising has created a demand for other merchandise? Or does the reputation of the store and its backing mean more than this nationally advertised response?

Is consigned stock practical—and can memorandum sales be used effectively?

What should be considered as a minimum markup on price leaders?

Is sufficient control exercised in obtaining initial markup?

The effective control of markdowns.

The problem of returns from customers.

How can the amount of trade-in allowance be controlled? Will local association regulations be in violation of the law?

Do too many specials result in confused stock conditions?

Can most slow selling be eliminated by careful use of records in placing original orders?

Is it practical to place a time limit on merchandise and carefully record its movement—finally selling it at any price?

Is a sliding scale of commissions or P.M. practical to move old merchandise?

Ways for quick disposal of trade-ins and damaged merchandise.

Herschel Lutes of the J. L. Hudson Co., Detroit, served as chairman of the discussion, and kept it lively and animated throughout the day. A. M. Sweeney, G-E refrigeration sales manager, subbed for Ralph Cameron, manager of the department store division, as the host representing the General Electric Co. Mr. Cameron, who had conceived and arranged the clinic, was ill.

Thursday afternoon was devoted to a presentation of General Electric appliances, the presentation including skits designed to dramatize effective selling points of the various products.

Crosley Earns $413,000 In Fiscal Year

(*Concluded from Page 1, Column 4*)

Powel Crosley, Jr., Lewis Crosley, Charles Sawyer, J. A. Earnard, J. D. Cloud, R. E. Field, and James Heekin being retained as directors.

While net earnings of $413,106.54, approximately 75 cents for each share of outstanding capital stock, were earned by the Crosley company during its fiscal year ending March 31, no stock dividend was declared. These earnings were left in the company by the management in the form of substantially increased inventories, factory equipment and accounts receivable.

Mr. Crosley pointed out that "in dollar value the business of the company has shown an increase of approximately 100 per cent over last year."

Mr. Crosley stated that work was progressing rapidly in developing the new line of Crosley radio receiving sets. Final laboratory tests of the new models are well under way and formal announcement of the new line is to be made shortly.

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THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

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NRA APPROVES ELECTRIC REFRIGERATION CODE

Lack of Rain Checks Sales In Midwest

Plight of Farmers Ends Good Spring Selling Season in Omaha

By Elston D. Herron

Long, soaking rains may have come to the Nebraskan plains by the time this gets into print. If so, there must be great rejoicing, for when your reporter was there June 2, the country was parched and bare, and Omaha business men were frankly depressed.

As for refrigeration—business up to the middle of May was surprisingly good, considering the drought-paralyzed condition of the farm lands, which are far and away Nebraska's biggest source of livelihood. What future sales would be, said distributors, depended largely on the skies.

Several Nebraskans predict that the wheat crop will not be more than 30 per cent of normal, although there may be a fair corn crop if sufficient rain falls within the next three weeks. Drought has so destroyed pastures that farmers are selling their cattle and hogs for whatever they can get, or are opening their government-sealed corn bins to get feed for stock.

Drought has not been the only cause of distress in the West and Northwest. Through the Dakotas, Nebraska, and Iowa have passed winds so strong that grain shoots have literally been torn out by the roots and blown away. And there have been bugs, scads of them.

Following are excerpts from Omaha newspapers which give some idea of the situation in the state:

"The state relief committee today ordered that no new work relief projects are to be authorized pending a decision on a proposal to abandon the system in favor of direct relief.

"To bring relief to farmers in the drought areas, the federal government, acting through county committees and federal directors, today began buying surplus cattle.

"A large percentage of Nebraska's wheat crop is beyond recovery, the Lincoln weather bureau reported today, and oats and barley also are seriously damaged . . . spring wheat in the northwestern part of the state is fairly good, but pastures are short everywhere.

"Nebraska's state relief committee today approved a policy of getting counties to double their contributions to relief needs for the year beginning next August. It made most of the allotments of federal relief funds for June needs on a temporary basis pending approval by county boards of agreements to increase local aid. A total of $286,777 was alloted for direct and work relief, of which $186,350 was given Douglas county (in which Omaha is located) where budgetary limits of $16 per month per family were set."

(Continued on Page 2, Column 1)

G-E Markets New Model for $74.50

Zerozone Announces Sales Headquarters & New Products

CHICAGO—Zerozone Corp., a division of Winslow-Baker-Meyering Corp., has opened general sales offices in the Engineering building at 205 W. Wacker Drive here, and has announced a household electric refrigerator line of seven models and a commercial refrigeration line of 23 condensing units.

The household refrigerator line has a capacity range of from 4 to 7.6 net cu. ft. capacity with a price range of from $116 to $273.

C. E. Jernberg, former president of Zerozone Corp., is manager of the general sales offices here. C. R. Jernberg is in charge of commercial refrigeration sales. O. H. Anderson is field representative.

All Zerozone manufacturing will be done at the plant of Copeland Refrigeration Corp., another division of

(Concluded on Page 5, Column 1)

Engineers to Study Air Cooling Trends

NEW YORK CITY—Latest developments in refrigeration and air conditioning will be reviewed by the engineering profession next week when the American Society of Refrigerating Engineers and the American Society of Heating and Ventilating Engineers hold their annual spring meetings Wednesday, Thursday, and Friday at mountain resorts in eastern Pennsylvania.

The A.S.R.E. will meet at Skytop, Pa., while the A.S.H.V.E. will meet at Buck Hill Falls, a short distance away. On Thursday the two societies will hold a joint meeting on air conditioning.

First day's session of the A.S.R.E. (Wednesday, June 20) will be in charge of A. R. Stevenson, Jr., presi-

(Concluded on Page 5, Column 1)

Omaha Distributors Draft Code of Ethics

OMAHA—To establish fair practices in the advertising, selling, and servicing of electric refrigerators, several distributors here have drafted a trade agreement, and are submitting it to Omaha and Council Bluffs (Iowa) retailers for approval.

The agreement has not yet been signed by a sufficient number of dealers to put it in force, and at least two distributors are withholding their signatures.

It would apply to outlets in Douglas county, Neb., and Pottawattamie county, Iowa—Council Bluffs, just across the river from Omaha, being in the latter county.

Text of the proposed agreement is published on page 7.

Door Placed on Top of Box with Unit in Bottom

CLEVELAND—A new type household electric refrigerator, revolutionary in design by virtue of the fact that the door is "on the top" (like a lid), is being introduced by the Specialty Appliance Sales Department of General Electric Co. The new model lists at $74.50 f.o.b. Cleveland. It will be available the latter part of this month, according to P. B. Zimmerman, manager of the specialty appliance sales department.

Also announced by G-E is a new range, which sells for $72. The two appliances together sell for a combination price of $139.50.

Both appliances have been approved by David E. Lilienthal, president of the Electric Home & Farm Authority,

(Concluded on Page 9, Column 4)

1,200 Men Working in Seeger Plant

ST. PAUL—With its orders for household refrigerator cabinets greater than ever before, Seeger Refrigerator Co. here is now working on a 24-hour schedule and employing 1,200 persons, an all-time high in the company's history.

Although production is much heavier on domestic cabinets than any other of the company's products, the display case production lines are busy, and case sales have mounted measurably over last year's volume, according to J. J. Leonard, Seeger sales manager.

The spurt in display cases is due, thinks Mr. Leonard, to the store-modernization campaigns being conducted this year by many commercial equipment sales outlets.

Sales of commercial refrigerator cabinets are only slightly ahead of last year, reports Mr. Leonard, and beer cooler volume is about the same as last season. Most of the company's sales of the latter equipment in '33 were made to breweries, while this season, outlets for commercial refrigeration units and store fixtures are the chief buyers.

Norge May Shipments Establish New Record

DETROIT—Shipments of Norge household electric refrigerators in May totaled 27,000 units, breaking the Norge all-time monthly record of 26,402 units which was set in April, it was announced last week by officials of Norge Corp.

Orders received to date for Norge units are 28 per cent greater than the entire 1933 production, Norge officials declared.

Haldeman Finnie Named Nema Refrigeration Division Manager

DETROIT, June 12—Haldeman Finnie, who for the last nine years has been vice president and general manager of the Timken oil burner operation (now known as the Timken Silent Automatic Co.), has been appointed manager of the Refrigeration Division of the National Electrical Manufacturers Association. He will assume his new duties immediately.

For the last 18 years Mr. Finnie has been affiliated with the Timken-Detroit Axle Co. He helped organize Timken's oil burner subsidiary, and supervised its operations thenceforth.

The American Oil Burner Association has claimed his services for the last five years as vice president and director. He has been a member of the NRA code committee of the oil burner industry since its inception, becoming vice chairman of the Code Authority for the Oil Burner Industry.

He was graduated as a mechanical engineer from Lehigh University in 1908.

During the World War he served with the 85th infantry division, and for six months was on Pershing's general staff in France. At present Mr. Finnie is a lieutenant colonel in the Reserve Corps infantry.

York Adds to Line Of Freon Machines

YORK, Pa.—Completion of two new Freon condensing units, consisting of 3-hp. triple-cylinder and 7½-hp. double-cylinder Balanseal compressors is announced by C. A. Pearson, manager of the commercial division of the York Ice Machinery Corp. These are all featured by York "Balanseal" compressor construction.

The introduction of these two new units increases the number of York refrigerating units of this series to 14 sizes, ranging from ¼ to 7½ hp.

The new units offer many distinct advantages because of their balanced operation and their compact design, resulting in smaller overall dimensions and substantial reduction in weight, with no sacrifice of capacity.

The 3-hp. 3-cylinder is a 2⅝ by 2½-in. compressor, with water-cooled condenser, the first 3-cylinder compressor of the York Balanseal series to be manufactured in commercial size. The space required for this compressor unit is 3¼ in. less than the York model 442-FW of the same capacity with a 10-in. reduction in height. This reduction in head room permits of its installation within smaller areas than was possble with previous units of the same size and capacity.

The York Balanseal double-cylinder unit is driven by a 7½-hp. motor, and operates at slow speed in comparison

(Concluded on Page 11, Column 3)

Pact Regulates Advertising of Service Policies

Restrictions on Instalment Selling Eliminated In Final Draft

DETROIT, June 11—Final approval has been given by the National Recovery Administration to the code of fair practices for the electric refrigeration industry proposed by the Refrigeration Division of National Electrical Manufacturers Association, according to word received today from Washington by G. M. Johnston, president of Universal Cooler Corp. and chairman of the Refrigeration Division of Nema.

The code becomes effective June 20.

The code has been revised a number of times since it was first submitted at open hearings Jan. 29. Principal change made was in the clause dealing with "service policy and replacement cost."

This clause as originally written provided that in developing plans for providing replacement units to the public the manufacturers would have to adhere to minimum prices for such units as set forth in the code. This clause, if adopted, would have prevented General Electric and Westinghouse from instituting their $5-for-4-years-service policies.

The "service policy" clause as now written provides that:

"Advertising and sales promotion shall contain no representation which, by reference to any term of years or by the use of trade terms or phrases not readily understood by the public, or otherwise, would cause any person to assume that an extension of the uniform warranty is intended, nor shall any representation be made in advertising or sales promotion which in any way tend to confuse such unit replacement plans with the warranty."

The clauses in article VI in the original draft of the code which established minimum down payments and a maximum period for time purchase plans have been eliminated.

Article IV, dealing with advertising and sales promotion, retains the substance of its form as submitted at the public hearings. It declares that "no representation of a character calculated to mislead the uninformed or casual reader shall be used."

This clause also states that no false or misleading statements shall be made concerning competitive makes.

The supervisory agency of the Refrigeration Division of Nema is designated to receive all complaints dealing with violations of the code. When a complaint is received, the agency will cause an investigation to be made for the purpose of establishing the facts.

Text of the electric refrigeration code will be found on page 10 of this issue.

Radically Different G-E Refrigerator Introduced by Manager P. B. Zimmerman

P. B. Zimmerman takes the rostrum of the General Electric Institute auditorium in Nela Park, Cleveland, to give a preview demonstration of the new $74.50 G-E "Liftop" refrigerator, and the range-refrigerator combination. A notion of the size and height of these new products may be gained by comparing them with Mr. Zimmerman, who stands between.

OMAHA DEALER NEWS

(Concluded from Page 1, Column 1)

Refrigeration distributors don't deny that the drought is becoming an increasingly potent factor in their business—they *are* worrying about it. But it hasn't got them licked. They are working overtime figuring how to keep sales up even though it does look like a hard winter in their territory.

Drought Affects May Grunow Sales

Said J. W. Sherry, vice president of Sidles Duda Myers Co., Grunow distributor, "Unless we get some good rains soon, the next 60 or 90 days for refrigeration are gloomy. As this state's corn, wheat, and alfalfa go, so goes our business. A few rains would do wonders for this section, psychologically as well as materially.

"In April our business boomed, and our unfilled orders piled up to between 700 and 800. Then the drought began to get serious, and in May, some dealers cancelled their orders, said they couldn't sell the merchandise with conditions as they were. Our May sales were 20 per cent below April."

Mr. Sherry thinks dealers' statements that refrigeration can't be sold in the face of the drought is partially hokum. "Early spring business was pushover business. Sales organizations got lazy. Now they aren't driving for sales. Dealers must get their salesmen organized to do a hard-hitting outside job; if they do, they'll get some volume.

"Take Omaha, for instance. Our few local industries have been working fairly well, and there are people here with money in the bank, even though they may be a little hesitant at parting with some of it because of the general business outlook. That's the kind of prospect we have to dig out, and sell to.

"It is the store which has depended on walk-in business that will take a beating as the drought tightens up all merchandising. But the outlet that goes out and gets sales can keep going all right."

Main topic of discussion among Omaha dealers and distributors right now is the trade agreement drawn up recently by some local wholesalers, and now passed among retailers and other distributors for signature. Text of the document appears on page 7 of this issue.

As explained by one distributor, the agreement was drafted by wholesalers who believed that with business falling off, dealers would start to make desperate efforts for business which might eventually result in unfair trade practices, and cause a general havoc in the business there. The agreement covers merchandising in Council Bluffs, Iowa, too, because the latter is just across the river from Omaha.

It is very much like a refrigeration code adopted by Omaha dealers last year, but this one has teeth in it. If and when it is adopted, distributors will be its administrators. They will levy fines on dealers for violation of its provisions, and will refuse to supply merchandise to any retailer who is in default of his fine payment.

Meters Used by 2 Large Omaha Retailers

The two largest refrigeration retailers in Omaha have been using meters this year. One is the Union Outfitting Co., furniture store selling Frigidaire. Other is Schmoller & Mueller Piano Co., which has had meter plans on Kelvinator, Grunow, and General Electric. Appliance sales manager of the latter outlet is E. W. Banse. Said he:

"Our refrigerator business has been exceptionally good this year, up to two weeks ago. March was between 500 and 600 per cent ahead of the same month in '33, April was about that much ahead of last April. Meters were responsible for that boom, we think, and the drought was responsible for the fall-off in May; it has caused such a strong feeling of insecurity. On June 1 and 2, though, sales went back to where they were in March and April. Frankly, we don't know exactly why.

"About 75 per cent of our sales this season have been on the meter plan. So far, we have had just one repossession on that type of business. We investigate the credit of meter buyers very carefully, and have averaged about 25 per cent rejections, although turn-downs aren't as high now as they were earlier in the spring when a poorer type of buyer came in.

"We don't plan to push meter sales so hard as the summer advances, because a buyer then doesn't have a large enough equity in her refrigerator to keep her paying for it through the winter months. Some smaller dealers have wanted us to quit using our meter and no-down-payment plan. As a concession to them, we have raised our carrying charge from 6 to 8 per cent.

"Our salesmen get the same commission on meter sales as on straight contract business—from 6 to 7 per cent. But the volume induced by our meter plan gives them a better income on that basis than they got from a 12 per cent commission on contract selling."

Of the proposed refrigeration agreement in Omaha, Mr. Banse said: "It is a good thing. I think it is wise to have distributors control and enforce it, for they are the only ones equipped to do it."

Hal R. Edwards, western division refrigeration manager with Westinghouse Electric Supply Co. in Omaha, does not agree with Mr. Banse on that point, and he has not, incidentally, signed the pact.

"It is ridiculous for a few distributors to try to run the retailers' business. A distributor should act as a dealer's adviser, because he has a broader point of view, but he should not be a policeman."

Westinghouse Has Good Commercial Business

Omaha Wesco did what Mr. Edwards called a "marvelous business" until the third week in May, when sales took a pretty steep tumble. "Undoubtedly the drought had the most to do with it, but the slump might have been delayed a while, if our newspapers hadn't continually made headlines out of the drought."

The outlet, wholesale only, sold 360 per cent of its quota in Westinghouse' national seven-weeks contest. As of May 15, it was four times ahead of the same period last year, and by the end of May had topped its quota for the entire year.

Mr. Edwards' dealers are doing some good work on commercial business this year, too, he said, particularly among small food stores. "Our whole campaign among food store proprietors is based on the idea that in buying new cases and condensing units, they are doing more than supplying a refrigeration need. They are modernizing, creating business."

Like other merchandisers we visited in Omaha, Mr. Edwards had only commendation for the activities of the Nebraska Power Co. in its selling of General Electric and Kelvinator. It takes no trade-ins, gives no special terms, and does a nice job of cooperating with other local outlets.

The Westinghouse man estimated the refrigeration saturation point in Omaha at 22 per cent of wired homes.

Noll Keeps Business Going with Contest

When H. C. Noll, Stewart-Warner distributor in Omaha, perceived early in May that the drought was clamping down on all business, and that the number of walk-in customers in his dealerships was dropping off, he did something about it right away. He started a prospect-finding contest, one that would take retail salesmen out on a canvassing program again.

In each dealership, he put a purse of $50, to be increased as sales were made during the contest period, May 5 to June 5. At the end of that time, the dealer's salesman who had turned in the greatest number of prospect cards was to receive 50 per cent of the total purse; the next highest was to have 30 per cent, and the third, 20 per cent.

Sale of a Stewart-Warner refrigerator by a salesman gave him credit for 50 additional investigation credit cards. Besides the name and address of the prospect, the cards called for information on the make and age of ice box now in use by the housewife, the amount of ice used each day, and asked the question, "Would you like to trade in your ice box on a Stewart-Warner electric refrigerator and pay the balance the same as buying ice?"

When we called, Mr. Noll had just returned from a plane trip down through Oklahoma and Texas. He commented on it, "Oklahoma City and Dallas refrigeration men tell me that their summer slump is not nearly so bad as in Nebraska. Already I've had 135 orders cancelled by dealers who say they can't sell so many refrigerators now that our drought is so severe. We haven't had a good rain here since January."

Another of this distributor's plans for his dealers who want to compete actively with meter stores is his "1 per cent payment plan." With it, a dealer makes a certain ice box allowance, then quotes the prospect a price, payments to be made weekly over 100 weeks. Interest, installation, and delivery are all included in the price. It is as follows:

Model	Amount Per Week For 100 Weeks
454-A	$1.49
554-A	1.82
704-A	2.27
564-A	2.33
714-A	2.72
834-A	2.93

Mr. Noll is also against the proposed refrigeration agreement in Omaha, chiefly because it would limit ice box trade-in allowances to 5 per cent of the list price.

"The agreement would not be good for the small dealer," he declared. "It would keep him from making allowances large enough to offset the advantages held by larger operators who can quote low carrying charges. And he deserves the right to make larger allowances; he can afford to—he has less operating expense than big stores. Besides, if we make too small an offer for old ice boxes, their users will decide to continue using ice, they'll lose interest in electric refrigeration."

Drought Fails to Stop Frigidaire Sales

Only story we got in Omaha which didn't follow the same lines as the others was from M. Lewis, office manager of Frigidaire Sales Corp., a division of the factory branch in Kansas City. May sales were as good as April. Only sales lost recently resulted from inability to make immediate delivery. Stock hasn't been coming in fast enough.

"Some of our dealers are down in the mouth now because of the drought," remarked Mr. Lewis, but added, "I think refrigeration sales won't suffer much from that. We don't make many sales to farmers and the drought won't reach the people who are our prospects."

Four's and sixes have been the big movers for the Frigidaire branch. Meter plans have worried his smaller dealers not at all, because they cater to a higher-class type of prospect than meter stores, explained Mr. Lewis.

He likes the idea of the Omaha trade practice agreement, said of it, "If it goes through, it will make refrigeration here a business, not a racket like radio got to be."

Kansas City, Mo.

Dealers Sell 11,000 Units In Five Months

When you ask Kansas City refrigeration distributors and dealers, "How has business been?" what an answer you get! More than 11,000 sales in metropolitan Kansas City in the first five months of the year—about 1,000 units ahead of *total* 1933 volume.

But merchandisers aren't lolling in self-satisfaction because of that record. They're staying up nights thinking of ways to keep the ball rolling, and above all, how to step up sales of bigger boxes. Far too great a percentage of spring business was in the 4- and 5-cu. ft. class.

Refrigeration's spurt in greater Kansas City early this spring didn't *just happen.* Several things were responsible for it. The big Jones department store moved its multiple-line display down to the main floor, started an aggressive promotion campaign. The Mace-Ryer appliance store chain and the Davidson Furniture Co. also began big advertising drives. All of these outlets featured the meter plan.

Kansas City Power & Light Co., selling Frigidaire, Norge, Kelvinator, Westinghouse, and Leonard, began its sales activities earlier than usual. Moser & Suor, Inc., Norge distributor, having bought all the '33 models it could get from the factory, let loose with a barrage of big-space advertising featuring that stock at reduced prices. And got, incidentally, the lion's share of spring business.

Smaller outlets were naturally forced by all this activity to begin their own drives earlier than usual, as were other distributors. Effect of the combined effort may be seen in monthly unit sales records for the year to date, as compiled by the Electric and Radio Association of Kansas City:

January, 690; February, 1,146; March, 1,943; April, 4,630; and May, more than 3,000. (Exact figures for May had not been completed when this was written.) Total sales for the first five months, over 11,000. Total for all of 1933, 10,300—biggest previous year's volume—although 10,000 units were sold in 1931, and 9,700 in 1932.

Fact that May sales fell short of April by more than 1,000 has not been startling to Kansas City merchandisers. Many of them reason that April was bound to be the '34 peak month there, in view of early promotional activities and heavy April advertising by both individual outlets and the association. Furthermore, first two weeks of May were quite cool.

But now, the weather is hot again, and even if the peak is past, distributors and dealers want to do everything possible to make a good showing for themselves. The association will run large advertising through June, and distributors are planning heavy summer schedules.

Dealers are well aware, we were told, that their salesmen must be pushed back into outside selling, if good volume is to continue this year. Walk-in business has dropped sharply, there is no necessity now—as there was in March and April—for many salesmen being kept on the floor of the big stores.

Probably the chief source of worry to most of the distributors we visited

(Concluded on Page 4, Column 1)

ur hat is off

to the industry on your record-smashing sales to date this year. We of C.I.T., with our Refrigerator Financing Service, are also setting a fast pace. One thing pleases us particularly. It is the satisfaction of new clients everywhere at the difference between what they expect and what C.I.T. gives in the way of full financing cooperation. Extra service to meet special situations... made possible by the scope and strength, and spirit of our C.I.T. organization.

C.I.T. Plans cover refrigerators, electric ranges, and air conditioning equipment. Let the C.I.T. man explain the service features offered through our nearest Office, at lowest rates. Offices in

Akron • Albany • Altoona • Amarillo • Asheville • Atlanta • Augusta • Bakersfield Baltimore • Bangor • Bay Shore • Beaumont • Beckley • Binghamton • Birmingham Boise • Boston • Bridgeport • Bronx • Brooklyn • Buffalo • Butte • Camden Cedar Rapids • Charleston • Charlotte • Chattanooga • Chicago • Cincinnati • Clarksburg Cleveland • Columbia • Columbus • Cumberland • Dallas • Dayton • Denver Des Moines • Detroit • El Paso • Erie • Florence • Fort Wayne • Fort Worth • Fresno Glens Falls • Greensboro • Greenville • Hagerstown • Harrisburg • Hartford • Hempstead Houston • Huntington, N.Y. • Huntington, W.Va. • Indianapolis • Jacksonville Jamaica • Jamestown • Jersey City • Johnson City • Kansas City • Knoxville Lexington • Lincoln • Little Rock • Los Angeles • Louisville • Manchester • Memphis • Miami Middletown • Milwaukee • Minneapolis • Montgomery • Montpelier • Mt. Vernon Nashville • Newark • Newburgh • New Haven • New Orleans • New York • Norfolk Oklahoma City • Omaha • Orlando • Paducah • Paterson • Peoria • Perth Amboy Philadelphia • Pittsburgh • Pittsfield • Portland, Me. • Portland, Ore. • Portsmouth Poughkeepsie • Providence • Raleigh • Reading • Reno • Richmond • Roanoke Rochester • Rome, Ga. • Sacramento • St. George • St. Louis • Salt Lake City San Antonio • San Bernardino • San Diego • San Francisco • San Jose • Scranton Seattle • Shreveport • Spokane • Springfield • Stockton • Syracuse • Tallahassee Tampa • Toledo • Tucson • Tulsa • Utica • Washington • Watertown • Wheeling White Plains • Wichita • Wilkes-Barre • Wilmington • Wilson • Youngstown.

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Completely Functioning Local Finance Offices in the Principal Cities

A Unit of COMMERCIAL INVESTMENT TRUST CORPORATION — CAPITAL AND SURPLUS OVER $70,000,000

TEMPRITE

Instantaneous Cooling

"The leading cooler for water, beer and other beverages"

Write for Catalog

Temprite Products Corporation

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That's what enthusiastic salesmen are telling Frigidaire dealers day after day. ¶ More and more people are saying "Ours is a Frigidaire '34"...Prospects are talking about it everywhere...dealers are kept busy demonstrating the new models...orders are piling in. ¶ Why do people have such an overwhelming preference for Frigidaire? Here are two reasons:—They know that they can safely bet their bottom dollar on the performance of a General Motors product. And, there are 1,000,000 more Frigidaires in use today than any other electric refrigerator—this popularity has been earned. ¶ You, too, can have the satisfaction of hearing your customers proudly say "Ours is a Frigidaire '34"—it will be music in your ears and cash in your pocket. Write the Frigidaire Corporation, Dayton, Ohio.

FRIGIDAIRE

A PRODUCT OF GENERAL MOTORS

KANSAS CITY DEALER NEWS

(Concluded from Page 2, Column 5)

is that too great a proportion of their retailers' sales this year have been for small and low-priced refrigerators. Profit hasn't been what it should, considering the unit volume.

Reason for it was that buyers were so plentiful salesmen didn't want to take the time with any prospect to sell her on the idea of buying a larger refrigerator, because in so doing, he might lose another prospect who was all ready to sign a contract.

So now, many wholesalers are communicating with, or holding meetings of retail salesmen, telling them that they must place greater effort on "selling up," that the number of prospects is now sufficiently reduced to warrant it. To say nothing of larger commissions on bigger or higher-priced models.

We heard that some of the major department and furniture stores will play up larger sizes in their mid-summer advertising, that they may even take their meter plans out of big type, as they have put out as many meters this spring as can be conveniently and profitably handled.

Economically, Kansas City has little to complain about. Lack of rain is threatening corn and wheat crops in Kansas, but the drought there is not so serious as in Nebraska, the Dakotas, and Iowa, particularly in the south-central and southeastern parts of the state.

"Anyway," as one dealer remarked to us, "it would take a lot more than drought to lick Kansas City. It has so many sources of income. South of us are big coal fields and a great lead and zinc section. In Oklahoma are oil fields, for which much of the financing is handled through Kansas City. North of us are orchard lands. And right in the city are a number of good factories."

A report issued the second week in May by management of the *Kansas Farmer* and *Missouri Ruralist* said, "A total of $20,000,000 is available to Kansas farmers for corn-hog reduction contracts . . . $27,000,000 has been set aside for corn-hog benefits in Missouri. The total corn-hog-wheat allotment money to be paid Kansas and Missouri farmers has been set at about $70,000,000."

Utility Cooperates With Dealers

All the men we visited spoke highly of the Kansas City Power & Light Co., said it does more than its bit to cooperate with local merchandisers in any legitimate promotional undertaking.

The utility will handle time-payment paper for any reputable Kansas City dealer selling the same makes of refrigerators as the power company. The latter makes a 6 per cent carrying charge, puts each month's instalment on the buyer's light bill. Paper will be taken by the utility only when the refrigerator goes on its lines, of course.

Goetze Urges Dealers To 'Sell-Up'

One distributor in Kansas City who is giving a great deal of thought to "sell-up" work is E. J. Goetze, head of the Midwest Grunow Co., and of the refrigeration division of the local association.

Already his company has sold 33 per cent more Grunows than during all of 1933, but it might have done a lot better had his company been able to get small models which were so much in demand during the spring. Small stuff still isn't coming through from the factory very fast, so Mr. Goetze is campaigning daily among his retail outlets to direct their efforts to large-model sales.

He has 160 dealers in eastern Kansas and western Missouri; those in the rural sections did not feel a slump in business nearly as quickly or decidedly as did outlets in the metropolitan area.

Said he: "Right now, I have back orders for 300 boxes of the less-than-$200 class. I can't start a contest in my own organization to boost sales of larger models, because it is against our association ruling for a distributor to take part in anything but a national competition."

Jenkins Stores Sell Kelvinators on Meters

One of the two establishments we visited whose sales did *not* take a dive in May was the Jenkins Music Co., Kelvinator, Norge, and Ice-O-Matic dealer with 12 stores in Missouri, Oklahoma, Kansas, and Arkansas. Head office is in Kansas City, and H. L. Schmutz is general manager of the refrigeration and radio division.

"Total refrigeration business done by our stores in May was greater than in April," he said. "Our Salina and Wichita stores are both in the wheat belt, and their sales have been good despite the drought. We aren't worried about it; the farmers are tickled if they have a good crop once every five years."

Jenkins stores use the meter plan on Kelvinator, and have a no-down-payment offer on all the refrigerators they handle. Of meter selling, Manager Schmutz said, "It is o.k. in every respect. The credit risk, not the sales plan, counts most in selling."

The chain of stores will begin to ease off of refrigeration in about 60 days, because, commented the manager, "salesmen can't make a good enough income selling one product the year 'round."

Small Dealers Are 'Going to Town'

Only other company we visited in which we found that sales had not lagged in May was the Columbian Electric Co., Westinghouse distributor. It is headed by Messrs. Satterlee & Blue, who conduct a Westinghouse retail operation next door.

Fred Leach, the distributorship's sales manager, said, "April was the biggest month in our history up to that time, but by May 15, we had exceeded April. The reason was, we think, that Westinghouse' Going to Town contest had salesmen working overtime to get extra points before it closed May 12. And they were pepped up by having our new C line to sell, too."

Small-town dealers are doing a big job for the distributor, said he. Harris-Goar Co. in Topeka made 1,115 per cent of its contest quota—145 refrigerators with three men—and the Stockisbrand Electric Shop in Garnett, Kan. (population 2,700), sold 1,100 per cent of its quota.

Some Leach observations:

"Salesmen and dealers, not the public, are kicking about price increases. Salesmen like to follow the path of least resistance.

"The five-year service plan has put Westinghouse over with a bang for us this year. The public thinks most electric refrigerators are about the same now, so it takes the one with the long warranty.

"We have 110 dealers in eastern Kansas and western Missouri. None of them use meters. A dealer is foolish to use them. If a person can't afford to pay more than 15 cents a day for a refrigerator, we don't want him as a buyer."

Small models have not been the big sellers for Satterlee & Blue, Inc, the Westinghouse retail outlet, according to L. F. Stein, sales manager, because the store has done no price advertising, has instructed its salesmen to concentrate on large models. More 7.5's have been sold than any other.

Fourth Successive Drought for Kansas

When the Stewart-Warner Alemite Co took on its manufacturer's line of refrigerators at the start of this year, P. P. Richmond was put in charge of that part of the business. He has franchised 80 dealers.

Kansas City Stewart-Warner outlets are the three Mace-Ryer stores and the Blue Seal Home Appliance Co. The Mace-Reynolds store in Kansas City is the Stewart-Warner retail outlet there.

"The early market this year was for low-priced refrigerators," he commented. "Now, however (first week in June), we can see a slight trend back to larger boxes. I can see a great market next year for small models, because we're now breaking into a class of prospects who want refrigerators, but can't afford big ones.

"If western Kansas could get some good wheat crops, there would be a tremendous market there for kerosene-operated refrigerators. There are almost no electrified farms in that section, but when crops are good, its people have a lot of money to spend—in good times, we can do $200,000 worth of Alemite business in that section in 12 months.

"This is the sixth year in 13 that Kansas has been hit by drought; four of the bad years have come in succession, this being the fourth."

Puckett Sights Trend To Quality Models

J. W. Puckett, vice president and treasurer of Midwest Electric Appliances, Inc., General Electric distributor, believes he can sense a move back to "quality buying" by people in the middle income brackets.

"It is true that there is a large market now for small and low-priced refrigerators, but it is composed of people who have to buy on a small-payment plan. The middle-class people who haven't yet bought electric refrigeration are showing quite a tendency to swerve away from low-priced models."

This distributor's business, both wholesale and retail, for the first four months of the year, was 70 per cent greater in dollar volume than in the same period last year. Sales to dealers for the first five months were 82 per cent ahead of the corresponding months in '33.

Dealers outside of metropolitan Kansas City didn't feel any slump in May, said Mr. Puckett, but the distributor's retail business decreased 9 per cent as compared with April.

"Our Kansas City retail volume dropped because of two things: Sales of 1933 merchandise at low prices by some stores in town either sold many of the good prospects, or made them so price conscious that they held off when price increases went into effect; and cool weather didn't force them to buy. Now, with hot weather back, our retail sales are more like what they were in April."

Mr. Puckett remarked that salesmen *can* sell larger models if they try, then backed up his statement by showing us that the company's retail salesmen, who are under the management's immediate supervision, sell more seven's than anything else, while dealer salesmen out in the territory sell more five's.

Norge Distributor to Feature Small Models

When we called at Moser & Suor, Inc., Norge distributor, we found Manager M. S. Tinsley making plans for a big June advertising campaign. The company had learned just a few days before that the factory would be shipping plenty of 4.5- and 5.5-cu. ft. Norges shortly, and that called for some heavy advertising.

The distributor—which does no retailing, used a lot of space early in the year to promote sales of '33 models at reduced prices, and kept up a good volume of advertising until the middle of May, when it could not get sufficient shipments of small boxes.

June campaign will spotlight the low price of the small Norges, dealers will use them as leaders. An attempt will be made to move larger models from now on, however, Mr. Tinsley said, and dealer salesmen are being instructed to "sell up" in a series of meetings sponsored by the distributor.

The company made a killing with its sale of '33 models this spring. March sales were the largest for any month in the company's history; then came April and doubled March. The sales manager thinks June will be as good as April, that volume will continue good through August.

There were more walk-in prospects in Moser's display room than any place we had been in two weeks. Each was given a demonstration by a floor man, then referred to some local retailer.

Association May Stop No-Down-Payment Sales

Spent a pleasant half-hour with G. W. Weston, secretary-manager of the Electric and Radio Association of Kansas City, who told us that some effort may be made later through the association to stop no-down-payment plans, and to keep some retailers from giving premiums with electric refrigerators.

Cheetham Heads Sales For Kold-Hold Co.

LANSING, Mich.—E. B. Cheetham has been appointed sales manager of the Kold-Hold Mfg. Co. succeeding A. L. Bogue, resigned, it was announced last week by W. G. Farnsworth, general manager of the Kold-Hold Mfg. Co.

Mr. Cheetham was formerly sales manager of the commercial refrigeration division of Gibson Electric Refrigerator Corp. and was previously connected with Kelvinator Corp.

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Testing and experimental laboratory service for Manufacturer, Distributor, Central Station. Test data exclusive property of client.

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SIDE INSULATION FOR AUTOMATIC VENDING MACHINE
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TOP MACHINE UNIT INSULATION
DOOR TOP INSULATION

Celotex

makes sturdier cabinets without increasing weight

Greater strength without increasing weight is an important Celotex advantage. This inherent strength, combined with lightness, permits the use of lighter steel and wood framing members.

Cabinets made of Celotex Insulating Cane Board are also *tight*. Heat-leaking cracks and joints are reduced to a minimum. Thus a frequent source of trouble is eliminated. Each insulated area may be covered by a single board cut the precise length, width and thickness.

A practical, workable material

Another reason why Celotex is highly favored is its workability. It is easily machined for the cutting of holes, for beveling or for notching. Note fabricated samples at top, bottom and sides of this advertisement.

Celotex also meets sanitation requirements completely. It is made of cane fibre and every fibre is sterilized as well as waterproofed. Furthermore, all Celotex products are manufactured under the Ferox Process (patented) and therefore effectively resist damage by Fungus Growth, Dry Rot and Termites (White Ants).

Celotex engineers are thoroughly experienced and will gladly assist you in every way. Write for any technical data or general information desired.

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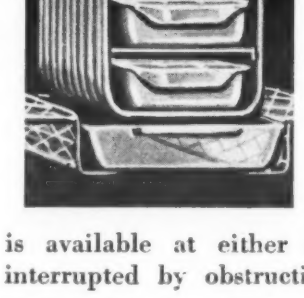

Advanced Design

In keeping with its policy of furnishing the best in refrigeration Copeland announces a new and advanced evaporator.

All Copeland evaporators are of the dry expansion type, made without seams with continuous tubular channels. The entire evaporator surface is gleaming white vitreous enamel, inside and out. There are no sharp corners or crevices. Easily cleaned with damp cloth. Mounted so that storage space is available at either side. Circulation of cold air is not interrupted by obstructions.

This type evaporator increases the net storage space as well as ice-cube freezing capacity. Users prefer this new Copeland design for its efficiency, simplicity and beautiful appearance.

Copeland design is essentially simple. No obstruction to thorough cold air circulation with consequent reduction of storage space is found in the modern Copeland.

Copeland Domestic Refrigerators are made in seven distinct models: 4, 5.4, 6.5, and 7.6 cubic feet net storage—Porcelain and Porceloid finishes.

Distributors desirous of selling a thoroughly dependable line, on which they will make money should write us today.

COPELAND REFRIGERATION CORP., Mount Clemens, Mich.
Division of Winslow-Baker-Meyering Corp.

Copeland
DEPENDABLE ELECTRIC REFRIGERATION

Zerozone Introduces New Products

(Concluded from Page 1, Column 2)

Winslow-Baker-Meyering Corp., in Mt. Clemens, Mich.

George Lingren, former factory manager of Zerozone, Inc., will be in charge of Zerozone production at Mt. Clemens. Perry Hall, former Zerozone, Inc., chief engineer, will be assistant to Lingren. Bert Lister will be in charge of the repair and return goods order department. R. G. Berg, assistant sales manager, will be stationed at Mt. Clemens.

Condensing units in the new Zerozone household line will have a single-cylinder conventional-type compressor. Methyl chloride will be the refrigerant used. All units will be powered with ⅛-hp. Delco motors.

Feature of the household models is the shell-type, dry-expansion porcelain-clad evaporator, made with continuous tubing and without seams. A Penn control will be used on the smallest model, and Cutler-Hammer controls on all the others. Controls on the larger models will have 9-point temperature control and a vacation setting. Detroit lubricator expansion valves are used.

All but the smallest models will be equipped with one rubber ice tray.

Zerozone household cabinets will have rounded vertical edges and a styled front. All interiors will be of porcelain.

Cabinets are insulated with Balsam Wool, ranging in thickness from 2 in. for the smallest model to 4 in. for the largest.

Hardware on all but the smallest model is of the semi-concealed type. Hinges are in torpedo-shaped design, with tips in black and the remainder of the hinge finished in chromium.

Porcelain models will have shelves in the new "diamond grid" design, which prevents small bottles and objects from falling through the shelves or catching in the openings.

The new Zerozone commercial units are available in sizes up to 3 hp., and are constructed in the typical Zerozone design with large flywheels and crankshafts. Complete specifications on the commercial line will be published next week.

Key specifications and prices of Zerozone household refrigerators are:

Model No.	Gross Storage Capacity (cu. ft.)	Net Storage Capacity (cu. ft.)	List Price (f.o.b. Factory)
554	4.42	4	$116.00
664	5.9	5.4	165.00
774	7.1	6.4	193.00
884	8.4	7.6	234.00
P-664	5.9	5.4	191.00
P-774	7.1	6.4	222.50
P-884	8.4	7.6	273.00

Air Conditioning Will Be Main A.S.R.E. Topic

(Concluded from Page 1, Column 2)

dent of the society. The meeting will be addressed by E. J. Abbott of the University of Michigan on "Sound Measurement Applied to Refrigeration Equipment" and by Everett Ryan of Frigidaire's Boston branch on "The Marketing of Commercial Air Conditioning."

The joint A.S.H.V.E.-A.S.R.E. session Thursday will be in charge of W. H. Carrier, past president of both societies. Talks will be made by Paul Bancel of Ingersoll Rand on "The Water Vapor Centrifugal Compressor"; and by D. W. McLenegan of General Electric on "The Application of Air-Conditioning Equipment on Residential and Commercial Power Circuits."

Following a brief intermission, T. S. Holden of the F. W. Dodge Co. will talk on "The Reemployment of the Construction Industry"; J. R. Hertzler of York Ice Machinery (in Brooklyn) on "Operating Results of an Air-Conditioning System Compared with Design Figures"; and John Everetts, Jr., consulting engineer of New York City on "What Is the Cooling Load Factor in Air Conditioning?"

Friday's session will have as chairman Henry Harrison of Carrier Engineering, a vice president of the society. Speakers include R. E. King of General Electric on "Commercial Storage of Meats" and John E. Nicholas of Pennsylvania State College on "The Rural Milk Problem."

A.S.H.V.E. Sessions

Before and after the joint session, the A.S.H.V.E. will hold sessions at Buck Hill Falls. Wednesday technical papers will be presented by J. J. Bloomfield on "Criteria for Industrial Exhaust Systems"; by A. E. Beals on "Dry Bulb vs. Effective Temperature Control"; by Prof. Axel Marin on "Influence of Stack Effect on the Heat Loss from Tall Buildings"; and by F. C. Houghten on "Wind Velocities Near a Building and their Effect on Heat Loss."

On Friday the A.S.H.V.E. will hear the following papers: "Insulating Value of Bright Metallic Surfaces" by Prof. F. B. Rowley, "Heat Transfer from Direct and Extended Surfaces with Forced Air Circulation" by Prof. G. L. Tuve, and "Factors Affecting the Heat Output of Convectors" by Prof. A. P. Kratz.

"...but we didn't get that one. We got one with Dry-Zero insulation. It doesn't cost half as much to run."

Dry-Zero offers *one* of the best selling points any salesman of a Dry-Zero insulated job can use. It is the chief reason why a low temperature can be maintained in the box with a minimum consumption of current. Dry-Zero assures economical operation for the life of the refrigerator. If you want the complete story of Dry-Zero insulation, write for "What is Dry-Zero."

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THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

Dry·Zero Corporation • CHICAGO Merchandise Mart • TORONTO 687 Broadview Ave.

By G. F. T.

Ben Allen on the TVA Program

BEN ALLEN, poet laureate of the General Electric organization, and representative of the specialty appliance department in the southeastern district, is very close to the TVA picture. The experiment is being conducted down in his territory, and he knows what dealers, distributors, central station executives, and the public down there think about the program.

It's Ben's candid opinion that, dubious as it may seem now to many observers, the whole thing may be a munificent boon to the refrigeration industry.

For one thing, TVA has forced an enormous reduction in rates for domestic consumption of electricity. Operating an electric refrigerator is now almost ridiculously cheap in that territory.

Moreover, fancy inducements are being made by power companies to get their customers to install more electric appliances in their homes—the big idea being that only by increasing their load can the central stations hope to compensate for the rate reductions into which they have been forced.

Commonwealth and Southern utilities, which operate in that territory, are now offering a "promotion" rate to their customers. A monthly quota for each customer is set up, based on the amount of current used by that customer in the corresponding month of 1933. If that quota is attained, the customer gets a flock of extra kilowatts *free*.

This scheme has given rise to the slogan "cook for nothing." And it's true. The promotion rate works out so that a customer may install an electric range in his home, and the juice it consumes likely won't cost him a cent.

This, in addition to a *rate reduction of from 10 to 15 per cent!*

Naturally this puts the gas companies in a pretty bad spot. The range buyer cooks free, and applies the money he would have spent on his gas bill to payments on the electric range. Hard to beat that!

Ben figures that there should be a market for 100,000 TVA refrigerators this year, and that next year it's possible half a million will be purchased! (We're going to run out of exclamation points pretty soon).

But Mr. Allen figures that that half-million market in 1935 will depend largely on how well the 1934 TVA models perform. Unless their operating cost is low, and unless they stay in order, the whole program may get a black eye from which it may take two or three years to recover.

* * *

They Like Dirt

To illustrate how some of the power companies feel about this active Intruder into their territory. Salesmanager "MIKE" SWEENEY of the General Electric refrigeration department tells a story of a group of men who went on a camping trip.

At the beginning of their journey, they drew lots to determine who would be the cook. After the unlucky one was chosen, it was agreed that the first man who complained about the cooking would have to take over the job himself.

All went along fine—no complaints—for several days. Then the cook got tired of his job, and figured he could lose it by cooking an exceptionally bad meal and evoking some protests. So he burned the bacon, fried the eggs hard as two-penny marbles, left the bread doughy, and made a pie of which the filling was nothing but mud.

Carefully he watched the expressions of his mates as they tried to down the unpalatable meal. Not a word was uttered. Finally he had to force the issue.

"How does the pie taste?" he asked the man at his right.

"Frankly," replied the camper, "it tastes like mud to me—but I like it!"

Al Uhalt's Dealers

The biggest braggart in the refrigeration business is AL UHALT, manager of the dealer division of the G-E refrigeration department.

Now don't misunderstand us. About himself and his own accomplishments Al is singularly modest. He doesn't even boast about his marvelously developed little boy. But he'll talk your arm off about those G-E dealers of his.

He knows hundreds of them by name, and can rattle off records which will astound you. They're the finest business men in the world, he asserts.

We even have a suspicion Al believes firmly that the Hebrews are laboring under a profound delusion: It is the G-E dealers who are God's Chosen People, not the Jews.

Walk into his office, and he'll grab you by the coat, sit you down in a chair, close the door, and in Patrick Henry fashion—with a proud glow in his eye and reverence on his tongue—tell you about such deeds as these:

Mt. Horeb Hardware Co. of Mt. Horeb, Wis. (population 1,425, with only 525 families), had a 1934 quota of six refrigerators. Up to May 28 this enterprising dealership had sold 28. Salesman HIMSEL canvasses directly, uses a kitchen coach, and employs a direct-mail follow up.

In one day late in May the Emporia Plumbing Co., Emporia, Kan., sold three 7-cu. ft. boxes, two 5-cu. ft. boxes, and one 4-cu. ft. box. Average price of each sale was $233.

W. G. WOOLEY of Tupelo, Miss. (where the TVA retail campaign started), made more sales *in the week before the opening of the TVA campaign* (May 14-19) than he did in all of last year! He sold 14 refrigerators, two ranges, and two water heaters (average price of each sale—including the low-priced water heaters, was $208).

Georgia Power Co. sold 800 refrigerators Monday, May 28, and is selling an average of 200 refrigerators a day—against a campaign quota of 4,000 for a 10-week period. Dealers, according to Al, do 40 per cent of Georgia Power's total sales.

* * *

General Motors Shows

In key cities all over the country last week General Motors staged colorful exhibits of its major products—which include Frigidaire household and commercial refrigeration and air conditioning, as well as the Chevrolet-Pontiac - Oldsmobile - Buick - La Salle-Cadillac series of automobiles.

To draw crowds to these exhibits, G-M contracted with the Music Corp. of America to furnish "name" bands. In Detroit it was HAL KEMP, stylist of the airwaves. One of the four or five best bands in the country, Kemp's distinctive musical organization was a genuine treat for Detroit.

At first even the combination of a free show, free souvenirs, and Mr. Kemp's famous band couldn't keep Detroit's Convention Hall filled; but toward the end of the week the crowds began to pour through, and all was hunky-dory.

The Detroit Free Press sent a star feature writer, HELEN C. BOWER, down to see the show, and somewhat to everybody's surprise, she came back with a long story on air conditioning, which was only a minor exhibit at the show, stuck back in one corner unobtrusively and unchallengingly. One would have expected that here in the Motor City *automobiles* would have been the most interesting part of the show. In fact, you couldn't see much else down there. But no! The newspaperwoman discovered that *air conditioning* was getting the most attention from visitors to the show. Here's what she had to say:

"On a day with Tuesday's high temperature, wouldn't it be grand to call up an office and say, "Send me up a ton of 'cool'—yes, 'cool.' We don't mean a ton of ice, and we certainly don't mean a ton of coal.

"Thanks to the inventive geniuses of the refrigeration experts, it's quite possible to order a ton of cooling, or three-eighths of a ton, or 100 tons of cooling. In other words, a part of the exhibit of General Motors products showing this week in Convention Hall is devoted to air conditioning equipment.

"While a house can be outfitted at moderate cost, as the houses of tomorrow will be, with entire systems for air conditioning which hitherto have been possible only at great expense and for large buildings like theaters and restaurants, there are neat 'package units,' self-contained, and no bigger than a large radio cabinet or a radiator.

"Detroit women who visit the exhibit may give only a passing glance at the automobiles, trucks and other General Motors products. But all of them congregate before the devices which are designed to free them from the slavery of hot kitchens and hot dining rooms where the food they have prepared finds only listless appetites. For the package units are planned so that as one can afford to, one or two rooms in a house, wherever hot weather makes life most unbearable, can be transformed into spots of cool comfort.

"Women like things to be practical around a house. So they are also told that each unit contains a heating coil for use in winter by a simple change from one fixture to another.

"What is shown here at the Detroit exhibit is developed more elaborately at the Century of Progress. This year the General Motors exhibit there included a whole new house, air conditioned throughout, including a 'lifetime' kitchen. This house is insulated and has double-pane glass to prevent temperature loss in either hot or cold weather. It's an example of the type of home-engineering construction which will make obsolete the house of today, say the experts.

"'Mr. Kettering decided that this house should be built to show what can be added to human comfort,' said J. A. Grier, chairman of the Detroit exhibit, Monday.

"'I certainly know what it means to work in an air-conditioned office, because I had one last year at the Century of Progress and it was a life-saver. Just so a housewife can do a better job in her kitchen, for instance, if she has one of these package units, or the house is air-conditioned.'

"'Special air-conditioning units are a great boon to hay fever patients, too,' said R. Fuller Calloway, local manager for Frigidaire. "'As long as the patient is in the presence of the mechanism, he will not have hay fever.

"'For this special machine provides for the induction of outside air, which is filtered and purified, so that all the invisible pollen which irritates hay fever is removed.'

"Another item of appeal to housewives is shown. It is a glass rolling pin, actually a bottle shaped like a rolling pin. It has a screw cap at one end, is supposed to be filled with water and kept in the icebox. Consequently when it is used, pastry doesn't stick to it and shortening doesn't melt.

"'No, they haven't begun to make these rolling pins of shatterproof glass yet,' laughed Grier. "'You aren't supposed to throw them.'

"Meanwhile, according to the air conditioning booklet, 'It seems unbelievable, but science says that the normal body produces more than 9,600 heat units a day—enough to boil away a gallon of water.' Which is our thought, our midsummer Night's Nightmare, for the day.

"So no wonder they invented air conditioning."

* * *

G-E Men Caught Off Guard

R. Cooper, Jr., sartorially correct G-E distributor in Chicago, leaves General Electric Institute in Cleveland.

Once in a Lifetime

An "ace" designer of commercial refrigerating equipment, F. E. Dennison of the York Ice Machinery Corp., scored an "ace" in golf recently at the York Outdoor Club—a hole-in-one on the fourth hole—par 3, and 135 yards long. This dream of every golfer was attained during the Spring Handicap Tournament, playing with Frysinger Rohrbaugh, partner of a York brokerage firm. As Mr. Dennison's match had the club privileges over a foursome waiting on the fourth green for him and his opponent to go through, the "hole-in-one" was witnessed in detail. The ball dropped within 3 ft. of the pin and then quickly rolled into the cup.

Winchell on Railroad Air Conditioning

In one of his widely syndicated columns last week, WALTER WINCHELL wrote the following about an experience on an air-conditioned train:

"It sounded funnier than it will read, I suppose . . . Two Santa Fe riders on The Chief—who were going over their New York conquests . . . 'Which one did you like best,' asked one of Lotharios, 'the one who could read—or the one who could write?' . . . The first half day out of Chicago was most comfortable with the new air-conditioned sleeping car . . . Until, that is, Violet Kemble Cooper, described as an actress, complained that she was cold . . . At the time she complained, an Illinois burg's temperature registered 97 in the shade, and in Kansas City they had a new heat record—103 . . . But Miss Cooper and her groom were 'cold' . . . And so without consideration for the rest of us—she persuaded the porter to start fussing with the complicated mechanism . . . So what happened? . . . So the thing went phffft—and all the Chief's horses and all the Chief's mechanics along the route couldn't put it back together again . . . It was, as we say, when we want to be most caustic, simply ducky! . . . Miss Cooper, of course, was not entirely to blame . . . You'd suspect that so big a railroad wouldn't entrust so costly a toy, on the first trip out—to porters—but to specially hired experts, who could fix things that went ka-putt . . . And the trip which was most comfortable in the diner (also air conditioned) was for the most part pretty lousy . . . In your extra-fare compartment you 'slept' by thick waves of stifling humidity . . . But Miss Cooper was no longer cold, you see . . . Vengeance, however, came a few hours later to the rest of us . . . When the fussy woman almost wept because 'it was so hot!' . . . She got howls of sympathy."

* * *

Vance Woodcox Vouches For This One

An unusual experience was that of an Alabama Power Co. salesman, one of whose prospects recently insisted upon paying him a half-dollar for a colorful photograph of a Kelvinator refrigerator.

Making a call on a Calera, Ala., resident who was unable to get down to the company's sales room, Salesman KENYON took along one of Kelvinator's five-color line booklets. Although no order was signed at the time, the prospect was so entranced with the colorful picture of the porcelain cabinet that he asked to be allowed to pay 50 cents for the illustration!

It was agreed that the prospect should pay the 50 cents and keep the picture so that he would know just what model it was he desired when he came into the office to place his order, the half-dollar to be refunded at the time the order was signed.

Three candid camera shots of Al Uhalt, manager of the G-E dealer division. (1) Listening to Dick Cooper (right) tell a new one. (2) Zupping soup. (3) Admiring one of Sid Egan's portraits of Rex Cole, G-E distributor.

(1) George Kobick, manager of the G-E apartment house division, looks over a survey. (2) Lunch time at Nela Park. The white-haired gentleman in the center is H. H. Bosworth, manager of the central station division. (3) Paul Dow, General Electric Institute prexy, addresses a group in the auditorium. (4) A corner in the Nela Park cafeteria. (5) Walter Daily.

Proposed Fair Competition Code For Omaha and Council Bluffs

Following is the text of the proposed code of fair competition for Omaha, Neb., and Council Bluffs, Iowa, refrigeration retailers. See story on page 1 this issue.

Article I—Definition

(a) The word dealer used in subsequent articles herein shall be construed to mean: Any person, persons, partnership, or corporation engaged in the retail selling of domestic mechanical refrigerators.

(b) The word distributor used in subsequent articles herein shall be construed to mean: Any person, persons, partnership, or corporation engaged in the wholesale distribution of domestic mechanical refrigerators.

Article II—Advertising

The use of deceptive, misleading, or untrue advertising shall be construed as unfair trade practice.

Article III—Sales Practices

(a) Disparaging or misrepresenting the equipment, output, reputation, prospects, or personnel of a competitor, or his ability to properly service the equipment he sells, is declared to be reprehensible and shall be construed an unfair trade practice.

(b) No salesman or firm shall attempt to break down a sale or secure a contract from a customer who has definitely placed an order for a domestic mechanical refrigerator with another salesman or firm. To do so will be construed an unfair trade practice.

(c) The acceptance, by a dealer, of an order for a domestic mechanical refrigerator, from a competitor's salesman shall be construed an unfair trade practice.

(d) For a salesman to share his commission with a customer or make a down payment or any portion thereof, shall be construed an unfair trade practice.

Article IV—Retail Selling Prices

(a) All refrigerators will be sold only at factory suggested retail installed prices. Prices on obsolete models shall be set by agreement between dealers and their distributor.

(b) No cash, courtesy, or special discount shall be extended except as follows:

(1) Sales to employes of dealers as outlined in Section (c).

(2) Sales to religious and charitable institutions for institutional use only.

(3) Sales to apartment house owners operating three or more apartments who purchase mechanical refrigerators in lots of three or more at one time.

Maximum discount not to exceed 10 per cent of retail installed list price.

(4) Sales to U. S. Government where contracts have been made by manufacturer.

(c) Dealers may sell to their permanent employes who have been in their employ 60 days or more, one electric refrigerator at such discounts as are in keeping with their store policy, providing that such electric refrigerator is to be used for said employe's personal use.

(d) The minimum finance charge on deferred payment sales of mechanical refrigerators shall be not less than 8 per cent per annum on the initial unpaid balance.

(e) Payments in full made within a period of 90 days following date of purchase of a mechanical refrigerator shall be considered a cash sale.

(f) The violation of any of the above provisions, or any portion thereof, shall be construed an unfair trade practice.

Article V—Trade-In Allowance

No trade-in allowance on a used refrigerator, except the trade-in allowance of a used domestic mechanical refrigerator, shall exceed 5 per cent of established installed list price of a new domestic mechanical refrigerator purchased. Any violation of this article shall be construed as an unfair trade practice.

Article VI—Premiums

The offer of premiums or free merchandise to induce sales, except when included in national selling plans of all manufacturers, or distributors' sales plans to meet a manufacturer's national premium offer, shall be construed an unfair trade practice.

Article VII—Free Trials

Free trials or home demonstrations are construed to be unfair trade practices.

Article VIII—Free Service

The offer of free service on a new domestic mechanical refrigerator other than the manufacturers' nationally advertised guarantee shall be construed an unfair trade practice.

Article IX—Commercial Bribery

The acceptance by a dealer or a dealer's salesman, who sells more than one line of refrigerators, of a secret bonus or compensation from a distributor or a manufacturer to favor his line over a competitor's, shall be construed an unfair trade practice.

Article X

No provision in this agreement shall be interpreted or applied in such a manner as to

(a) Promote monopolies

(b) Permit or encourage unfair competition

(c) Eliminate or oppress small enterprises, or

(d) Discriminate against small enterprises.

Article XI

If any person, partnership, or corporation in the retail domestic mechanical refrigeration business is also engaged in any other line of industry, the provisions in this agreement shall apply to and affect only that part of his business which is included in the retail domestic mechanical refrigeration industry.

Article XII—Administration

1. The executive committee is hereby constituted the administrative agency of the mechanical refrigeration industry to carry out the administration of this agreement.

2. The organization and constitution of the executive committee shall be as follows:

(a) Each distributor of mechanical refrigerators in Douglas county, Neb., and Pottawattamie county, Iowa, shall be entitled to appoint one member on said executive committee who shall serve until May 1, 1935.

(b) Said executive committee shall select from among its members a president who shall serve until May 1, 1935. In the event of his disability, the executive committee shall select a successor.

(c) The executive committee shall select an administrator who shall be a member of the executive committee.

3. Complaints against any dealer and/or any distributor may be filed with the administrator. The administrator will investigate said complaint and in the event that he believes that there has been unfair trade practices on the part of the accused, he shall so report to the president who shall appoint the administrator and two other members of the executive committee to act as judges and conduct proceedings to determine the guilt or innocence of the accused. Reasonable notice shall be given to the accused and an opportunity for a hearing and after the same, if a finding of guilty is returned, the administrator may impose such fine or penalty as to him may appear reasonable or just.

4. All fines due and owing shall be paid to the administrator within five days from the date of levying the same.

5. All distributors of mechanical refrigerators who have subscribed to this agreement agree that they will not sell refrigerators to any dealer in Douglas county, Neb., or Pottawattamie county, Iowa, who is in default of the payment of any fine.

Article XIII—Revenue

1. Each distributor of mechanical refrigerators in Douglas county, Neb., and Pottawattamie county, Iowa, who has subscribed to this agreement shall pay as dues the sum of $5 per month due and payable on the 10th day of each month.

2. All dues and fines levied for violations of this agreement shall be collected by the administrator who shall account for the same to the executive committee.

Codes for Retailers of Electric Refrigerators

Due to the fact that there is no NRA code of fair competition which covers effectively the practices of retailers of electric refrigeration, dealers in a number of cities have formulated their own fair practice codes. The code published on this page is an example.

Meanwhile the NRA Policy Board is studying the price fixing provisions of the proposed code of fair competition for the wholesale electrical supply trade, according to word received last week from Kenneth Dameron, deputy administrator, NRA distributing trades section. This code was originally submitted nearly a year ago.—Editor.

Georgia Power Sells 535 TVA Models in 1 Day

ATLANTA—Georgia Power Co., on May 28, the first day it made its TVA-emblem Kelvinator model available to the public, sold 535 of these models, officials of the company have announced.

CROSLEY SHELVADOR

is accepted everywhere as the last word in electric refrigeration

Orders for Crosley Shelvador and Tri-Shelvador Refrigerators are pouring in. The big Crosley factories are being taxed to capacity. Housewives all over the country are demanding the exclusive features and the exceptional value that only Crosley can give.

Model EA-43

4.3 cu. ft. NET capacity, 9.15 sq. ft. shelf area, 2 ice trays—42 cubes—one double depth tray.

$117.00

Model EA-55

5.5 cu. ft. NET capacity, 11.6 sq. ft. shelf area, 3 ice trays—63 cubes—one double depth tray.

$145.00

Provides about 50% more "*usable*" storage capacity

Shelvador provides a definite place for many items that are "space robbers" in ordinary refrigerators. Example: an orange occupies exactly the shelf space an orange should—not the shelf space of a milk bottle.

Streamline Beauty

The *Streamline Beauty* of Shelvador and Tri-Shelvador models does justice to the modern woman's sense of beauty. The pleasing design fits in with modern kitchen arrangement.

Compare These Features

There is the famous Shelvador, ventilated front, automatically illuminated interior, no-stop defrosting control (defrosts while refrigerator is operating), chromium plated stamped brass hardware of modern design, thorough insulation throughout (including door), round cornered porcelain interior, white lacquer exterior with black trimming, ample tray capacity for quick freezing of ice cubes.

ALL MODELS HAVE AUTOMATICALLY ILLUMINATED INTERIOR

Ventilated Front

This feature of all Crosley models permits cool air to be drawn from the front and warm air expelled from the rear, properly ventilating power unit even when refrigerator is placed in limited space or close to wall.

$99.50

MODEL EA-35

This Crosley Shelvador has a NET capacity of 3.5 cubic feet with a shelf area of 7.5 square feet. It is equipped with two 21-cube ice trays—42 cubes in all. It incorporates all of the Shelvador Series features described to the left. Dimensions: 48 1/16" high, 23 1/8" wide, 24 7/16" deep.

CROSLEY TRI SHELVADOR

brings additional exclusive features that offer the utmost in electric refrigeration value

NRA **Model E-55** **$157.50**

The Crosley Tri-Shelvador Series incorporates all the features of the Crosley Shelvador. It has *additional* features that make it the outstanding achievement in electric refrigeration.

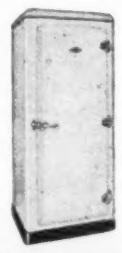
1. **THE SHELVATRAY . . .** Can be placed in a horizontal position instantly. Place articles on it and carry them, Shelvatray and all, to table, range or cabinet. An exclusive Crosley feature. (Patent pending).

2. **THE SHELVABASKET . . .** Swings with the door. Not refrigerated. Handy for greens, carrots, cabbages and the like. Exclusive. (Patent pending).

3. **THE STORABIN . . .** A place for potatoes, onions and other bulky items. Not refrigerated. Exclusive with Tri-Shelvador. (Patent pending).

Self-closing porcelain door to freezing chamber is a feature of all Tri-Shelvador models. Model E-55 (left) has 5.5 cu. ft. NET capacity, 11.6 sq. ft. shelf area, 3 ice trays—63 ice cubes—one double depth tray. The Crosley Shelvador and Tri-Shelvador models represent the latest in refrigeration design, convenience and performance. Ask your Crosley distributor for a demonstration. *All models available in full porcelain at slight extra cost.*

Montana, Wyoming, Colorado, New Mexico and west, prices slightly higher.



Model E-43

4.3 cu. ft. NET capacity, 9.15 sq. ft. shelf area, 2 ice trays—42 cubes—one double depth tray.

$135.00

Model E-70

7 cu. ft. NET capacity, 14.9 sq. ft. shelf area 4 ice trays—84 cubes—one double depth tray.

$185.00

The Crosley Radio Corporation - Cincinnati

(Pioneer Manufacturers of Radio Receiving Sets)

Home of "*the Nation's Station*"—WLW—500,000 watts—most powerful in the world—70 on your dial.

POWEL CROSLEY, Jr., *President* CINCINNATI

ALL PRICES INCLUDE DELIVERY..INSTALLATION..ONE YEAR FREE SERVICE

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EDITORIAL AIMS

To encourage the development of the art.
To promote ethical practices in the business.
To foster friendly relations throughout the industry.
To provide a clearing house for new methods and ideas.
To broadcast the technical, commercial, and personal news of the field.

VOL. 12, NO. 7, SERIAL NO. 273, JUNE 13, 1934

Problems in Apartment House Market

WHILE the business of selling electric refrigerators to hundreds of thousands of American homes rolls along merrily and, it sometimes seems, almost effortlessly, the highly skilled sales crews who work on the apartment house market are running into some snags this season. And the snags are so stubborn that the salesmen's most ingenious efforts are being evoked to circumvent them.

Time was when the apartment house market was a gold mine. (It still is, general sales managers will probably tell you, but it is now becoming more difficult to extract nuggets from the lode.) In days past manufacturers could look to the metropolitan apartment house market for a heavy, if not a major, portion of their sales. The idea caught on rapidly among landlords, and it soon became established that an apartment wasn't modern or even rentable unless it had mechanical refrigeration.

One result of this widespread acceptance of modern refrigeration in the apartment house field has been a relatively high saturation of the market. In most large cities all the better apartments are completely equipped, and the only remaining sales possibilities lie among the poorest class of multiple dwellings—those which rent for $25 a month and less.

Partial Sales Contracts

For an apartment operator to sink one-fifth or one-sixth of his gross monthly income into payments for electric refrigeration is sometimes asking a great deal. That may be more than he clears over and above his operating, maintenance, and interest charges. And his tenants possibly are not the kind who appreciate the need for proper refrigeration.

To meet this situation partial sales are sometimes made—that is, the landlord will install an electric refrigerator in the apartment of each tenant who will agree to a small increase in rent. Generally about half the tenants will agree to the increase in order to get the added convenience, distributors are finding.

Saturation, however, is only one of the worries which are besetting the apartment house sales managers, who once rode so high, wide, and handsome. One of their chief sources of irritation is the local contractor who assembles no-name refrigerators and sells them at a figure which the distributor of nationally known merchandise generally can't touch.

This type of competition has always been present in the apartment house field, particularly during the days when multiple systems comprised the bulk of the installations. But this year it seems that the local assemblers are especially active. Reason assigned for the amount of business they are getting—and distributors testify that these local operators are accounting for an unusually large proportion of the total sales in the apartment house field this year—is banker control of real estate.

Finding themselves swamped with foreclosed real estate, banks and trust companies have had to set up special departments to handle the management of the apartment houses which were dumped on their hands in such profusion and confusion. The men set up in charge of these new departments, according to distributors, were largely expert accountants who, when purchasing anything, were interested only in the lowest price they could obtain.

So, when opportunists came around with job lots of slung-together refrigerators for sale at prices well under the going rate, they found willing listeners in the persons of these bank officials. The real estate department heads of banks and trust companies have had backing on this get-the-cheapest-possible policy from higher-ups in their institutions who, figuring that they will soon be out of the real estate business, are reasoning that they can buy junk today and let their successors take the grief tomorrow.

Junk-Man Merchandisers

A recent example of how one entrepreneur can wreck a local market may be found in one large city in which is located one of the major manufacturers of electric refrigerators. This concern, like many others, put out a new cabinet line this spring. Fundamental flaws in the design and construction of these cabinets were discovered after more than a thousand had been manufactured. These faulty thousand cabinets were sold at scrap prices to a junk man. The junk man, sensing he had something, went to an air compressor manufacturer, contracted for a thousand compressors, shopped around for other parts, and assembled a thousand refrigerators—all of which he disposed to bank-operated apartment houses at prices with which the local distributors could not hope to compete.

The apartment house picture is not entirely dark, of course. Almost all the inferior-grade refrigeration being installed now will have to be replaced in the near future. And replacements are today becoming more and more of a factor in the apartment house market. This year, for instance, numerous replacements of brine-circulating multiple systems are being made. About 10 years ago there was a wave of brine-circulating system installations in better-class apartment houses. Inasmuch as brine pipes rust out in about 10 years, most of these installations are now ready for replacement.

Such replacements are comparatively easy to sell, they mean installations in every apartment in the building, and they generally call for the best quality of merchandise. For once tenants have become used to automatic refrigeration, they find it indispensable. In the modern apartment, the electric refrigerator is as essential as the stove and the bed.

Mr. Mortensen Does Some "Quoting"

J. C. MORTENSEN, manager, Southern Electric, Highway between Weslaco and Donna (which we understand is somewhere in the wide-open spaces of Texas) recently took his pen, and his imagination, in hand to inform the world regarding "the truth about electric refrigeration." The result is a "Safety Bulletin for the Home," copies of which have been forwarded to the NEWS because of statements in the bulletin to the effect that the material therein is reprinted from this publication.

It is possible that all of the *words* and perhaps some whole sentences have been extracted from various technical articles, local codes, communications of readers and *advertisements* which have appeared in the NEWS, but no such *combination* of items ever appeared in this paper. Obviously the effect is misleading.

It reminds us of the wit who quoted from the Bible as follows:

"Then Judas went and hanged himself."

"Go thou and do likewise."

By the way, there is another verse in the Bible (James 3:8) which says: "But the tongue can no man tame; it is an unruly evil, full of deadly poison."

LETTERS

Excellent Report

Utilities Engineering Institute
404 N. Wells St., Chicago
June 8, 1934.

Editor:

I want to especially thank Mr. Elston D. Herron for his excellent report of his visit at our Institute.

I personally believe that this article will go a long way toward aiding the industry in general to become better informed of the educational facilities that are available from a financially sound and responsible organization devoted exclusively to that work.

E. P. SORENSEN, President.

Has It Come to This? Apparently It Has

Major Appliance Corp.
Fourteenth Floor, Merchandise Mart
Chicago
June 7, 1934.

Editor:

Thought the enclosed ads would be of interest to you. These were sent to us by an account that is considering the Major, and quoting his words, "Has the industry come to this?"

But I do think it is ridiculous advertising.

H. F. MACGRATH,
Vice president,
In charge of sales.

Editor's Note: Two of the newspaper advertisements referred to in the letter contain the following offers:

"The housewives of Grand Rapids are asking how can they do it? Those who have purchased know. There is no catch in this offer. During this big event to every buyer of a Norge rollator refrigerator we will include without additional cost a beautiful 50x100 (approximately) full size resort lot. This offer applies to every Norge refrigerator we have priced from $114.50 up—no restrictions. Full factory guarantee. Small down payment—30 months to pay. H. F. Cole, Inc., 56 Division Ave., N."

"With the purchase of a P67 Norge refrigerator at no extra cost you get a set of community china 67 pieces $69.50 value. With each Norge refrigerator you get choice of electric clock, cut glass water set, cut glass luncheon set. Values up to $30.00. L. E. Phillips, 1365 Plainfield Ave., 350 Leonard St."

Belongs to Gas Industry?

Thompson & Holmes, Ltd.
Wholesale Distributors
Household Electric Appliances
171 Bluxome St., San Francisco
June 4, 1934.

Editor:

It is our understanding that several years ago at the time of the death of Dr. Steinmetz there was an article published in the "Refrigeration News" quoting Dr. Steinmetz, in which he made the statement to the effect that the future of the refrigeration industry belonged to the gas industry.

Inasmuch as we are distributors of the Electrolux gas refrigerators we are very interested in getting a hold of this article, if it is at all possible, and would like to have you send us a copy of the "Refrigeration News" in which this article appeared.

ROBERT E. CRANE,
Secretary.

Answer: Dr. C. P. Steinmetz died Oct. 26, 1923. ELECTRIC REFRIGERATION NEWS was established Sept. 11, 1926. We do not recall the quotation.

Gas Attack

The Cramer-Krasselt Co.
Milwaukee
May 28, 1934.

Editor:

Enclosed is a folder issued by J. C. Mortensen, manager, Southern Electric, attacking gases used in refrigerators such as sulphur dioxide and methyl chloride, and Mr. Mortensen uses as the authority for his statements material which he says appeared in a recent issue of ELECTRIC REFRIGERATION NEWS.

I feel quite sure that ELECTRIC REFRIGERATION NEWS has been misquoted and that you will probably want to take steps to stop the circulation of the folder in question.

WALTER SEILER,
Executive vice president.

Answer: See comment in adjoining editorial column.

Whalen's Sales and Service
Alamo, Tex.
June 6, 1934.

Editor:

Inclosed you will find a circular that is being widely circulated over the valley by this firm, as being taken from the NEWS.

We do not think that they got this from the NEWS, and thought that you might like to see this.

A. O. CLOVER.

Answer: Same as above.

Prospects Think Air Conditioning Too Costly

Frigidaire
123 Market St., Wilmington, N. C.

Editor:

Please mail me three copies of ELECTRIC REFRIGERATION NEWS of May 9; also four copies of May 30 when it is issued. I understand that in the May 30 issue there will be new specifications of household boxes.

I look forward each week to the arrival of the NEWS, and read it from cover to cover.

Our business this year is late in getting started, but I think we are making up for lost time. We are getting quite a few requests on air conditioning, but most of the prospects seem to think it is a little too high yet.

C. B. WESSELL.

Directory Omission

American Hammered Piston Ring Co.
Baltimore, Md.

Editor:

We received a copy of the 1934 REFRIGERATION DIRECTORY for which we forwarded you a check a few days ago and on looking over this directory we are certainly surprised to note that while you have listed practically all of the largest piston ring manufacturers throughout the country, the name of our company has been omitted.

For many years our rings have been used as standard equipment by many of the larger household and commercial refrigerator manufacturers throughout the country. We believe that at the present time we manufacture more piston rings for refrigerator compressors than any other piston ring manufacturer in the United States.

In view of this it is hard to understand just why our name has been omitted from this DIRECTORY.

H. D. BROWER,
Assistant sales manager.

Answer: We are glad to know of your interest in the electric refrigeration market and regret that this information was not available when the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK was being compiled.

We knew that many changes had taken place in the status of suppliers since the first edition of the DIRECTORY in 1932, and questionnaires were sent out to all manufacturers in order to bring the list up to date. Proof pages were sent to your company with a request for corrections and when no reply was received, a duplicate set was mailed. Again there was no answer and we concluded that your company was not interested in this market.

About the only complaints we received concerning the 1932 edition were concerning suppliers listed who were not in a position to render service to this industry and we made an effort to limit the listings in the 1934 edition to companies which could be depended upon to give proper attention to inquiries from subscribers.

EDITOR.

An Advertisement That Brought Quick Action

The Cramer-Krasselt Co.
Milwaukee, Wis.

Editor:

You will no doubt be interested to know that the first advertisement in your publication on the Waukesha line has created a great deal of interest among dealers and distributors in all parts of the country.

A rather unusual example of dealer interest is the case of E. J. Gustafson, a dealer located in Slaton, Minn., who read the Waukesha advertisement in his office on the Sunday following it's day of issue. He became so interested that he called his partner to the office where they discussed the products, and the result was that they jumped into their automobile and drove to Waukesha, arriving there at 4 o'clock on Monday morning.

To make a long story short, they were signed up as a distributor and gave Waukesha an order for 100 units.

CARL H. BREHM.

You Came to The Right Place

American School
Chicago
May 28, 1934.

Editor:

I would like to have you send me a sample copy of your magazine ELECTRIC REFRIGERATION NEWS, because I believe it contains the advertisements of manufacturers of materials used by the refrigerator manufacturers

I am called upon quite often to recommend various firms to electric refrigeration service men or to recommend particular types of apparatus used with electric refrigerators. I am also often asked by the service men to recommend some magazine to them that deals with the later developments in the electric refrigeration field. I feel that a sample copy would prove valuable reference material in my file, and would be consulted when in need of information on the subject.

CARL H. DUNLAP,
Head, Electrical Engineering Dept.

Modern Appliances & Scientific Layout Reduce Kitchen Processes & Save Steps

Reese Mills of Westinghouse Tells How Kitchen Should Be Arranged to Allow for Straight-Line Production

By Reese Mills, Manager, Range Sales, Westinghouse Electric & Mfg. Co.

THE preparation, preservation, cooking, and serving of food in our 29,000,000 American homes is the biggest and most important industry in the world. Each home must have a kitchen; 29,000,000 workshops that require now an average of at least four hours of work a day in each. This great industry, bigger than our factories or all our offices, has not been considered from the standpoint of straight-line production efficiency and the many electrical conveniences that go with it.

Just how important can efficient arrangement of equipment and facilities be in the kitchen? Can it be as important in the home as it has been in the factories? Experience has proved that it can be.

Just as an example, a woman was unknowingly observed while she was making a cake. It required 50 processes and 143 steps. This same kitchen was then rearranged and the same cake was made by the same woman, under the same conditions—this time, however, it required only 24 processes and 24 steps. The cake was made with just half the work, and with one-sixth as many steps.

The first consideration in modernizing the kitchen workshop is to arrange the equipment in logical order for continuous, straight-line flow of material.

This means that the electric refrigerator should be nearest the food delivery door, because there is where all perishable foods are stored.

Next in line should be a counter work surface, next to the refrigerator, for cold food preparation. The wall cabinets over and the floor cabinet under this counter should be equipped with the implements that are used in the preparation of cold foods, such as salads, desserts, refreshments, etc. Even the location of all the tools should be so arranged as to minimize the amount of reaching or lifting.

Next in line is the clean-up counter, of course, consisting of a sink—and an automatic electric dishwasher. Dishes, pans, bowls, forks, knives, etc. soiled at the adjacent counter can be placed on the clean-up counter without moving.

Then comes the hot food preparation counter. Food that is going to be cooked must first be made ready—and requires certain items of equipment, all of which are conveniently located in the upper and lower cabinets, right within reach.

When food is ready to cook the housewife doesn't want to walk back across the kitchen. Therefore, next in line is the range. It also is equipped with wall and floor cabinets, efficiently equipped.

The range is closest to the service door to the dining room. Thus it will be seen that straight-line production has done exactly the same thing for this workshop women use as it has for men's workshops. It has reduced processes and motions to a minimum. It saves steps, saves labor, speeds the flow of work, brings about greater efficiency, and adds greater convenience and comfort to the housewife.

With this much accomplished, the next essential is to make the kitchen lovely, cheerful, inspiring. For it is a woman's workshop—and should have these feminine qualities to which wives and mothers are entitled. This is done with color and by the selection of wall and floor materials.

Another feature of the ideal kitchen is an unbroken counter surface—right from the refrigerator or delivery point, past the range, to the serving point. There are no open spaces in between, no chance for knives, forks, dishes or anything to fall through, requiring great inconvenience and annoyance to recover. No chance of anything falling off the back or side. Breakage hazard is reduced to a minimum. Lifting, whether it be heavy or not, is eliminated by this continuous counter construction.

Cleaning difficulties are further simplified by "coving" the base. The linoleum floor continues unbroken up into this coving. There is no crack or angle to clean. This area could be cleaned just like the floor; in fact it is a part of the floor. It makes for greater ease, greater speed, no banging and marring of furniture, no bruised knuckles. The housewife can stand right up to the work surfaces. lean against them in fact, for this cut-away section provides ample toe room. It protects shoes and the finish of the base cabinets, too.

In addition to the cheerful general illumination of the entire kitchen provided by a central ceiling light, light is provided for the housewife's convenience right over the work surfaces where you prepare food—and over the clean-up counter where you wash vegetables, pans and dishes.

With this flood of rightly placed light it becomes easy to get every last trace of dirt out of the celery, every last grain of sand out of the spinach. Seeing is made easy, eyestrain prevented.

Help for Salesmen

Reese Mills of Westinghouse explains in this article how an all-electric kitchen can be planned so as to provide the maximum benefits for the housewife who is working in it.

The value of the electric kitchen to the salesman of electrical appliances is that it involves a coordinated plan, that it offers a definite objective to the prospect who installs one in his home. Mr. Mills explains in detail what that objective is.

A working model of the kitchen which Mr. Mills describes is on display at the Westinghouse exhibit at the World's Fair in Chicago.

G-E Builds $79.50 'Liftop' Model

(Concluded from Page 1, Column 3)

and will be placed on sale in the seven Tennessee Valley states where the federal government has launched its low-cost electrical appliance program.

The new G-E of the "liftop" type has an all-steel cabinet, and a hermetically sealed unit (located in the bottom) which carries the 5-year service protection at an additional charge of $5. Methyl formate is the refrigerant used.

Feature of the construction is that the outer wall of the refrigerator cabinet forms a radiating surface for the condenser. The cabinet is insulated throughout with 2 in. of insulation.

Net food storage capacity of this model is 3 cu. ft.

The evaporator consists of a single plate-type coil, on which rest two ice cube trays, each making 20 cubes at a freezing. The refrigerator is mounted on legs and is portable, weighing approximately 150 lbs. Interior is of porcelain and exterior of baked Glyptal enamel.

Cost of operation is claimed to be low, with current consumption said to be 1 kwh. per day under normal operating conditions.

Features of the new flat-top, low-priced range are precision temperature control, porcelain cooking surface, blue porcelain enameled broiler pan with rack, drip tray, vent shielded from wall, reversible double pole surface unit switches, and single oven unit for baking and broiling controlled by selector switch.

It is finished in white porcelain enameled top and front, with white baked Glyptal sides and black trim and black legs.

The unit equipment of the range consists of three surface units, two being 6½ in. in diameter and of 1,000 watts and one being 8½ in. in diameter and of 2,000 watts; one unit with 3,000 watts for "preheat," 1,000 watts for "bake," and 2,000 watts for "broil." Maximum connected load is 7 kw.

The refrigerator and range, when purchased in combination, are joined by an over-hanging top on the range which fits flush against the refrigerator top, and which allows an air space between the range and the refrigerator.

A Cook's Eye View

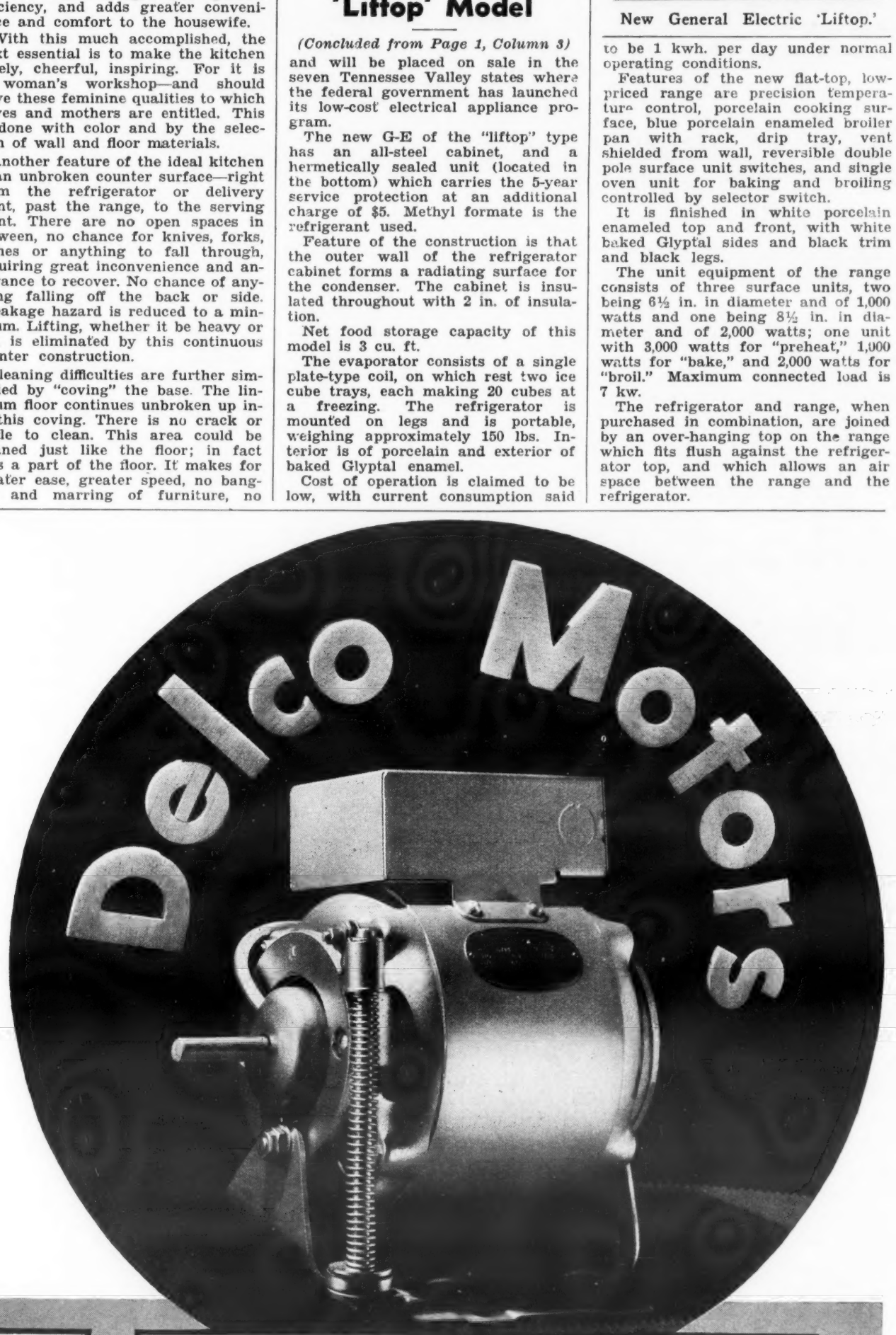
New General Electric 'Liftop.'

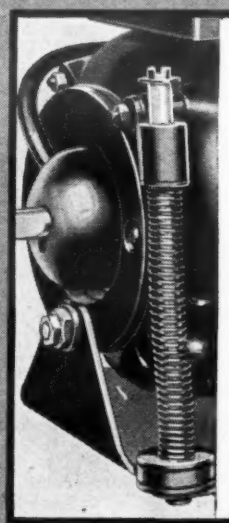
4

IMPORTANT FEATURES

that contribute to the efficiency of

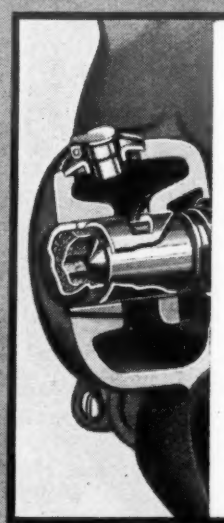
DELCO MOTORS





1

Automatic Belt Tightener—Delco refrigerator motors are now available with this new device which assures proper tension on the belt at all times, compensating for belt stretch. The snubber provides the correct amount of friction in order to prevent motor oscillation.

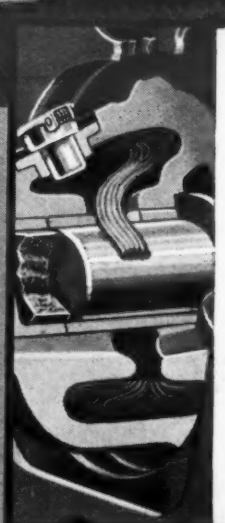


2

End-Play Take-Up—Delco motors are entirely free from end-play noise. All horizontal movement of the motor shaft is effectively stopped by the cushioning action of a cork bumper. Adjustment is never necessary—because the cork is properly lubricated at the factory, and wear is negligible.

3

Vulcanized Rubber Cradle Mounting—The rubber ring is vulcanized between the steel plates and effectively absorbs all the objectionable motor vibration, resulting in a quiet installation. The rubber is held permanently in place by being vulcanized to both plates.



4

Sealed Lubrication—This appreciated feature of Delco motors prevents motor over-oiling, by returning excess oil to a reservoir. This in turn, stops any oil from getting on the windings. Delco *Sealed Lubrication* keeps the Oil *in* the motor during shipment—installation—and its years of operation.

DELCO PRODUCTS CORPORATION, DAYTON, OHIO

Cooper's Program Is Utility Show Feature

CHICAGO—When the Public Service Co. of Northern Illinois held an electrical exhibit at Northbrook, Ill., May 24, General Electric supplied the principal features, according to S. Nides, sales promotion manager for R. Cooper Jr., Inc., Chicago distributor.

Each woman entering the hall was presented with a copy of "The New Art" recipe book. A complete General Electric kitchen was the center of attraction. Here Miss Edwina Nolan, director of the G-E Kitchen Institute, prepared an oven dinner, a Thrift Cooker meal, a one-dish meal on the surface units and several cakes. The food was given as door prizes at the end of the evening.

Jean DeJen, campaign director at Nela Park, was present to introduce R. H. Mighell of Schenectady, the magician in charge of the House of Magic.

Both the large and small General Electric kitchen coaches, stationed outside during the evening, were visited by people at the show.

ANSUL

Dependable Refrigerants .....

SULPHUR DIOXIDE

Manufactured under strict laboratory supervision. Absence of moisture and foreign materials made certain through analysis of every cylinder. Forty warehouses can supply you immediately. Write for prices and location of nearest source of supply.

METHYL CHLORIDE

A product backed by Ansul's wide reputation for producing dependable refrigerants. Low moisture and acid content are guaranteed by laboratory analysis of every cylinder. Write for full information and prices.

ANSUL CHEMICAL CO.
MARINETTE - WISCONSIN

New Nema Official

HALDEMAN FINNIE
New manager of the Refrigeration Division of National Electrical Manufacturers Association.

Sears Sales to May 21 Gain 30% Over 1933

CHICAGO—Retail sales by Sears Roebuck & Co. for the four weeks ended May 21 amounted to $27,485,073, which was the highest dollar volume of sales realized during this period since 1931.

Sales were up 30.6 per cent as compared with the corresponding period last year.

For the sixteen weeks to May 21 sales aggregated $93,974,595, as compared with $69,612,587 for the like period a year ago, indicating a gain of 35 per cent.

Sears, Roebuck officials point out that the experience of their company does not bear out the opinion that there is any marked recession in consumer buying.

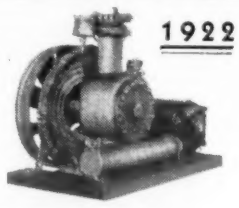
Mason Donates Cup for A.S.R.E. Golfers

DETROIT—George Mason, president of Kelvinator Corp., has donated a silver loving cup to go to the winner of the annual American Society of Refrigerating Engineers golf tournament which will be played next Wednesday and Thursday at Skytop, Pa. George Bright, Detroit, will be in charge of the tournament.

New Dealer Sells 15 Units In First 24 Days

ROBINSON, Ill. — Ted Meskimen, local furniture dealer who took on the Westinghouse electric refrigerator line this year, established what Westinghouse officials believe to be a record for a new dealer by selling 15 units in the first 24 days of his dealership.

The First Curtis Unit Built in 1922 Still Operates Today



1922
1923
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934

Watch! for an interesting Curtis announcement to be made shortly in this publication.

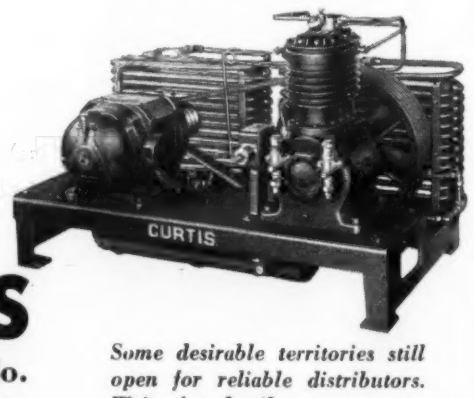
80 Years of Manufacturing Experience

40 Years of Compressor Building

12 Years' Experience in Producing Refrigerating Units

Curtis is one of the oldest and most experienced refrigeration equipment makers. And the Curtis line is one of the most complete lines available.

⅛ to 2 h.p. air cooled
⅓ to 5 h.p. water cooled



CURTIS
Refrigerating Machine Co.
Division of Curtis Manufacturing Co.
1912 Kienlen Ave., St. Louis, U.S.A.
518 H Hudson Terminal, New York City.

Some desirable territories still open for reliable distributors. Write for details.

Text of Approved NRA Code for the Electric Refrigeration Industry

Manufacturers Are Barred from Giving Premiums to Buyers, Making Misleading Statements about Other Makes, and Advertising Replacement Plans as Warranty Extension

Article I
Purpose

To effectuate the policy of Title I of the National Industrial Recovery Act, the following provisions are established, pursuant to the provisions of Article XIV of the Basic Code of Fair Competition for the Electrical Manufacturing Industry, approved by the President Aug. 4, 1933, as a Supplemental Code of Fair Competition for the Refrigeration Subdivision of the Electrical Manufacturing Industry, and upon the eleventh day after approval by the President shall, together with the provisions of said Basic Code and any modifications thereof, or any additions or supplements thereto, hereafter made, be made a part of and be the standard of fair competition for the Refrigeration Subdivision of the Electrical Manufacturing Industry.

Article II
Definitions

(a) The term "Refrigeration Subdivision of the Electrical Manufacturing Industry" as used herein is defined to mean the manufacture for sale of electrical household refrigerators and such commercial electric refrigeration as is not within the control of other duly approved codes.

(b) The term "President" means the President of the United States of America.

(c) The term "Act" means Title I of the National Industrial Recovery Act.

(d) The term "Administrator" means the Administrator for Industrial Recovery.

(e) The term "Employer" as used herein shall include, every person engaged in the manufacture for sale of the products of the Refrigeration Subdivision of the Electrical Manufacturing Industry as herein defined.

(f) The term "Person" as used herein shall include natural persons, partnerships, associations, trusts, trustees, trustees in bankruptcy, receivers and corporations.

(g) The term "Employee" as used herein includes anyone engaged in any capacity receiving compensation for his services, irrespective of the nature or method of payment of such compensation.

Article III
General Provisions

(a) No employer shall mark or brand any product of the industry in any manner which has the tendency to mislead or deceive customers or prospective customers as to the substance, grade, quality, size, quantity, origin, or preparation of any product of the industry sold or offered for sale.

(b) Employers shall refrain from inducing breach of consumers' contracts, and shall refrain from enticing away employees of competitors for the purpose of unduly hampering, injuring, or embarrassing competitors in their business.

(c) Employers shall refrain from wilful or malicious defamation of competitors and from disparagement of competitors' products.

(d) Employers shall not give secret rebates or discounts, free special services or exorbitant advertising allowances.

(e) Employers shall not give, permit to be given, or directly offer to give anything of value for the purpose of influencing or rewarding the action of any employee, agent or representative of another in relation to the business of the person employing such employee, the principal of such agent or the represented party. This provision shall not be construed to prohibit free and general distribution of articles commonly used for advertising except so far as such articles are actually used for commercial bribery as hereinabove defined. Commercial bribery provisions shall not be construed to prohibit prize contests openly conducted among salesmen.

(f) Employers shall not give, permit to be given, or directly offer to give rewards or premiums to actual or to prospective purchasers of their products. This clause shall not be construed to prohibit prize contests openly conducted among actual or prospective purchasers of such products.

(g) The making or circularization of threats of suit for infringement of patents or trade marks to or among customers of a competitor, not made in good faith and for the purpose of harassing and intimidating customers is prohibited.

Article IV
Advertising and Sales Promotion

Advertising and sales promotion as dealt with in this Code shall have the broadest possible interpretation. The term shall apply without limitation to magazine and newspaper advertising, bill-boards, radio broadcasting, house organs, catalogues, direct mail material, and to all forms of advertising and sales promotional activities in verbal or printed presentation.

(a) No employer shall make or cause or permit to be made or published any false, untrue, or deceptive statement by way of advertisement or otherwise concerning the materials of construction used in, the operating characteristics of, the quality, size, origin, or preparation of any product of the industry sold or offered for sale.

(b) No representation of a character calculated to mislead the uninformed or casual reader shall be used. All statements made in advertising or sales promotion shall be complete and so phrased as to convey to the casual and uninformed reader the full and complete facts.

(c) No false, untrue, or misleading statements shall be made, either directly or by inference, in any advertising or sales promotion concerning the product advertised or any competitive product, nor shall any statement be made the effect of which will be to mislead the public with respect to other products.

(d) Advertising and sales promotional activities offering products which are not intended to be openly and freely sold, with the object of attracting customers for the purpose of selling other products, are expressly prohibited.

(e) Neither direct nor indirect use shall be made of competitive apparatus for comparative purposes in connection with sales promotion or advertising.

Article V
Warranty and Service Policy

(a) Except as special provisions shall from time to time be approved by the Supervisory Agency for this Subdivision and by the Administrator, no employer shall give any express warranty which extends his responsibility for refrigeration equipment manufactured and/or sold by him beyond one year from the date upon which such refrigeration equipment is installed on the premises of the original purchaser, or which extends his responsibility for such refrigeration equipment beyond the replacement or repair of such equipment which shall be defective in material and/or workmanship.

(b) Employers may develop individual plans for providing replacement units in case of failure after the expiration of the warranty, provided:

(1) Advertising and sales promotion shall contain no representation which, by reference to any term of years or by the use of trade terms or phrases not readily understood by the public, or otherwise, would cause any person to assume that an extension of the uniform warranty is intended, nor shall any representation be made in advertising or sales promotion which will in any way tend to confuse such unit replacement plans with the warranty:

(2) In any case in which an employer's policy with respect to unit replacement is referred to in advertising or sales promotion, such advertising and sales promotion shall state clearly the amount which has been added to the complete unit price to cover the average cost of unit replacement.

(c) The term "original purchaser" as used in this Article shall be deemed to mean that person, firm, association or corporation for whom the refrigerating equipment referred to therein is originally installed; or the bona fide assignee of that person, firm, association or corporation.

(d) The provisions of this Article shall not be subverted or evaded, directly or indirectly, by any manufacturer resorting to any form of advertising not in harmony with the letter and spirit of this Article or subterfuges of any kind. On the other hand, no provision of this Article shall be construed to limit or relieve from liability arising out of any warranty implied by law.

Article VI
Terms of Sale

(a) The following provisions shall be observed except as special provisions may, from time to time, be approved by the Supervisory Agency.

(b) Sales made by employers to their outlets shall, whenever feasible, be subject to collection by sight drafts attached to the bills of lading. Open account shall in no case be extended by employers to their outlets beyond the 20th prox., unless such accounts, extended beyond the 20th prox., shall be evidenced by a negotiable note, trade acceptance, or similar negotiable instrument bearing interest at an annual rate of 6 percent (6%), or the maximum legal rate, whichever is lower. Employers shall charge interest at an annual rate of six percent (6%) or the maximum legal rate, whichever is lower, on all overdue accounts.

Article VII
Investigation of Complaints

(a) Upon receipt of written complaint filed by an employer, the Supervisory Agency of the Refrigeration Subdivision of the Electrical Manufacturing Industry shall cause an investigation to be made for the purpose of establishing the facts. If such investigation establishes facts from which there is a presumption that this Code has been violated, the offending employer shall be requested by registered letter from such Supervisory Agency to refrain from such offending practice, and if that employer repeats or continues the offense, the matter may be referred through the proper channels to the Administrator for such action as seems to him proper in the circumstances.

When any investigation is made or authorized by the Supervisory Agency of the Refrigeration Subdivision, such investigation shall be made by a person or persons not employed by any member of the industry whenever such investigation requires facts to be obtained which should not be made known to competitive organizations.

(b) If the Administrator shall determine that any action of a Code authority or any agency thereof may be unfair or unjust or contrary to the public interest, the Administrator may require that such action be suspended to afford an opportunity for investigation of the merits of such action and further consideration by such code authority or agency pending final action which shall not be effective unless the Administrator approves or unless he shall fail to disapprove after thirty days' notice to him of intention to proceed with such action in its original or modified form.

Article VIII
Modifications

(a) This Code and all the provisions thereof are expressly made subject to the right of the President, in accordance with the provisions of sub-section (b) of Section 10 of the National Industrial Recovery Act, from time to time to cancel or modify any order, approval, license, rule, or regulation issued under said Act.

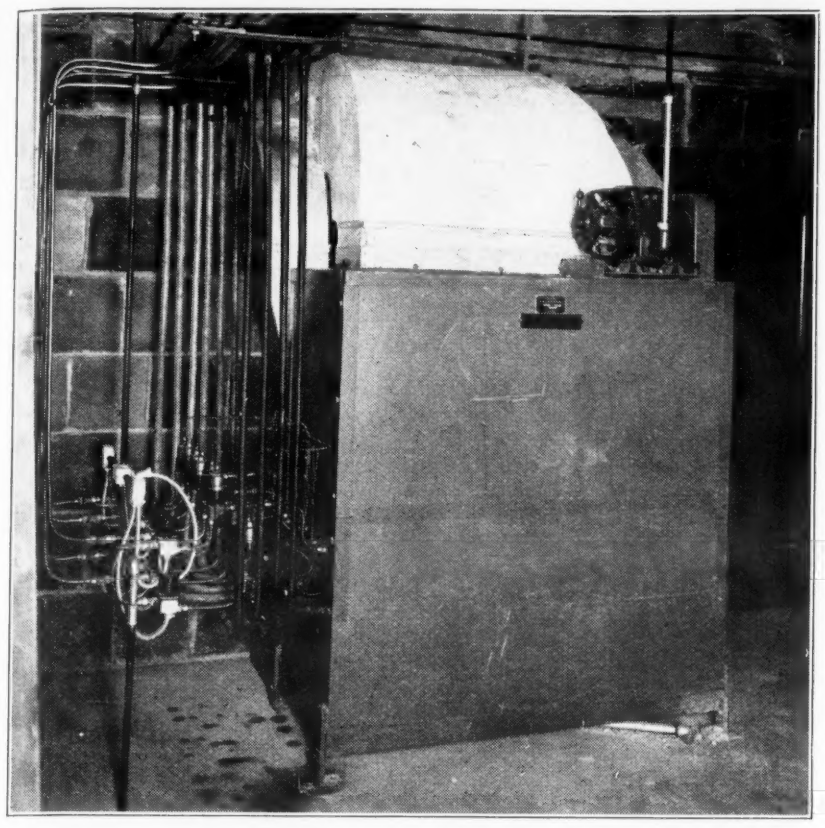
(b) This Code, except as to provisions required by the Act, may be modified or amended on the basis of experience or changes in circumstances, such modification or amendments to be based upon application to the Administrator and such notice and hearing as he shall specify, and to become effective on approval of the Administrator, unless otherwise provided, and when so approved shall have the same force and effect as any other provision of this Code.

Article IX
Effective Date

This Code shall become effective on the eleventh day after its approval by the Administrator unless otherwise provided.

AIR CONDITIONING

Central-System Cooling



This Carrier 'Weathermaker' air conditions Clark's restaurant in Cleveland. Note expansion valves (at left) on individual lines from five compressors.

Solenoid Valve Is Built By Automatic Products

MILWAUKEE—Just developed by Automatic Products Co. of this city is a new solenoid valve for the control of refrigerants.

Principal features of the new valve are a Monel metal valve stem which closes against a special alloy seat pressed into the body, a body which is a brass forging, and the sealing of the coil with a plastic material to keep out moisture.

In the operation of the valve, the valve stem is opened and closed by the action of a movable plunger. As the surrounding coil is energized, the plunger is forced upward. It is not attached directly to the valve stem, but moves a short distance and gains momentum before it raises the valve stem itself. The valve stem closes with the flow of the liquid.

The plunger and valve stem "float" in the coil and do not touch the top of the guide tube. The plunger and valve stem are enclosed in a tube which is sealed tight so that no leakage can occur. Both the tube and the valve stem are non-magnetic so that no mineral particles can be attracted which might prevent a tight shut-off.

Cover of the valve is in a black crackle finish and encloses the entire coil. A name plate at the top gives the necessary rating information.

Power consumption is approximately 12 watts. The coil is so constructed that the current may be kept on indefinitely without danger of overheating. Constant current is required to keep the valve open. As soon as the circuit is broken, the valve shuts.

Barlow Agency to Handle Brown Corp.'s Advertising

SYRACUSE, N. Y.—Brown Corp., manufacturer of air conditioners in this city, has placed its advertising with the Barlow Advertising Agency of Syracuse.

Carrier Air Conditions Cleveland Restaurant

CLEVELAND—A Carrier "Store Weathermaker" air-conditioning system is employed to air condition the remodeled Clark restaurant at East Ninth and Huron Rd. here.

Feature of the installation is the fact that it is entirely automatic in operation. A 2-point thermostat set for a 2° F. variation maintains comfortable conditions at all times during the hot months.

Five 3-ton Carrier compressors installed in the basement furnish refrigeration for the system, cutting in automatically, in groups, in accordance with the temperature conditions in the dining rooms.

The system is designed to utilize, under normal conditions, a 50-50 mixture of recirculated and fresh air. All of the air is filtered by spun glass filters and is passed through the filters 10 times every hour.

The fans which circulate the air pass 3,200 c.f.m. of air into the dining rooms, providing a minimum of 10 cu. ft. per minute of fresh air per occupant and operating continuously maintain air distribution and air movement at all times.

Air is brought into the dining room at the ceiling through special slotted outlets provided by Carrier. These outlets are located at the rear of the dining rooms and in the case of the large room also at the half-way point.

The system is so regulated that the air in the dining rooms is constantly maintained under pressure. For this reason no kitchen odors can come in the room.

Return grilles are located at the rear of the main dining room.

The cooling units which serve to cool the air also accomplish dehumidification, extracting 4 gal. of water per hour under maximum conditions.

Cost of operation of this system, under maximum load conditions, is said to be 3 cents per ton of refrigeration per hour.

Air-Conditioning Systems Need 'Vitalizing' Units, Says Canadian

Editor's Note: We haven't had the opportunity to get up to Toronto to see Mr. Rutledge's air-conditioning system, but we hasten to print his letter rather than withhold the information pending the suggested investigation.

R. Rutledge
7 Adelaide St. W., Toronto 2
May 25, 1934.

Editor:

This is a news scoop if you ever had one.

It answers the statement made in one of your recent issues that no air-conditioning system on the market at the present time fulfills all of the qualifications.

If you will come to Toronto within a week I will give your paper the greatest scoop that the business paper of an industry has ever had.

I will show you an air vitalizing system tested for nearly two years by one of America's largest chain store systems in one of their own meat departments. It is giving results no scientist can explain.

I will show you this system in a butcher's "walk-in" refrigerator equipped with electric refrigeration which, in a two year period, has never been defrosted. In which the coils never have carried enough frost to hide the metal. There is no excess humidity. No dehydration. No odors. No service. The running time of the machine has been cut in half.

I will show you a system where water is actually drying wet wooden refrigerator walls. You will see the solution to today's unsolved problems of refrigeration. You will discover why we have lived and slept for centuries in devitalized air.

As stated above, this system has been tried out under practical conditions for almost two years. The system is about to be made public. You are cordially invited to see it first.

I have been a reader of the "NEWS" for years, and am keenly interested in your repeated appeals for a definition of air conditioning upon which to standardize the industry.

Obviously, the existing multiplicity of devices embracing widely diversified processes and ideas are the result of one colossal mistake. There, can never be a standard basis so long as the natural law of the air is so completely disregarded by technicians who apparently regard the air as something made from a formula, subject to duplication by various kinds of mechanisms and theories.

Natural air is a result of natural law. To sustain this law constitutes air-conditioning's only possible definition, basis and objective.

Vitality is all that enclosed air ever lacked. Heating, cooling and humidifying for comfort destroyed health for ages because all artificial treatments proved destroyers of vitality. Artificial temperature lacks the vitality of natural cold or sun heat.

Maintaining outdoor vitality in indoor air is the only problem left for air conditioning to solve that was not solved by former methods.

Vitalizing with devitalized hot water vapor is as impossible as washing dirt out of air and leaving vitality in, or blowing air through metal coils or metal machines without attracting and destroying the electric ions so vital to health. No different to handling electric charged wires without insulation or expecting good radio reception over certain mineral deposits.

No one can machine vitality into air any more than into a turnip. We must do it nature's way or be content with artificial air which is about as good for health as artificial turnips are for food.

The air-conditioning industry must work with instead of against natural law or remain an aimless outlaw under suspicion and open to repeated questioning.

All enclosed air, especially air artificially heated or cooled in homes or refrigerators, must have a continuous inflow of vitality to replace continuous devitalization, otherwise isolated air becomes as dead as isolated water or any other part of nature when cut off from its source of life and vitality.

R. RUTLEDGE.

York Adds to Line of Freon Machines

(Concluded from Page 1, Column 4)

with other units of its size and capacity (440 r.p.m.). Bore and stroke are 4 by 4 in.

The weight of the new 2-cylinder unit is only 37 per cent of its predecessor—an advantage when installing the machine in buildings where floor loads must be considered.

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The design of the double-cylinder Balanseal unit permits multiple application on air-conditioning loads requiring 15 hp. or similar multiples, according to Mr. Pearson.

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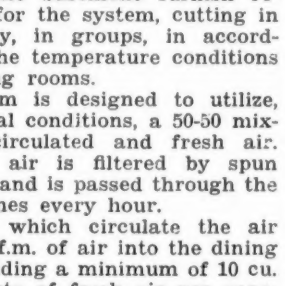

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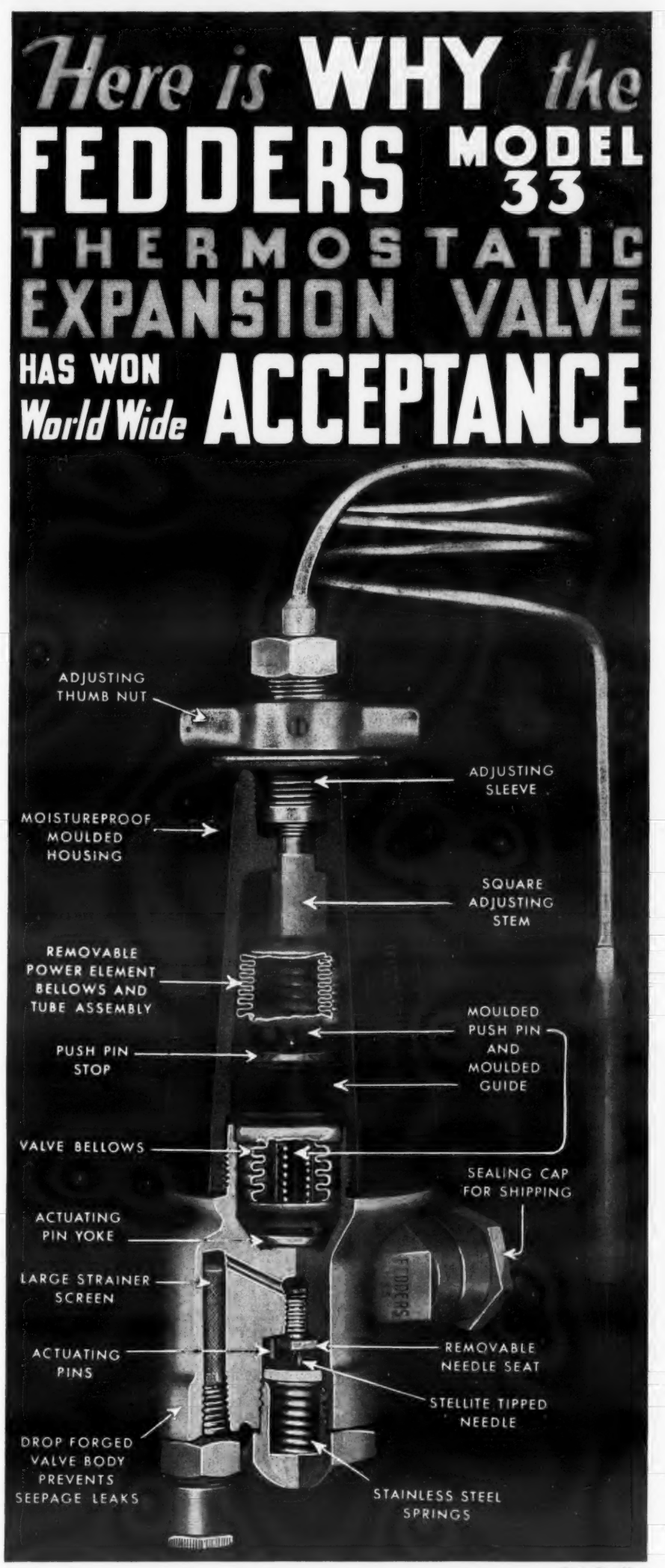

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SERVICE

Welsbach Used Ethyl Chloride, A Reciprocating Compressor And an Expansion Valve

WELSBACH electric refrigerators, manufactured in considerable quantities until three years ago by the Welsbach Co. of Gloucester City, N. Y., a large producer of water heaters and gas mantles, are fairly easy to service providing the service man has adequate service information. Like the Allison electric refrigerator, service instructions for which were given in the last two issues of the NEWS, the Welsbach uses ethyl chloride as a refrigerant. It differs from the Allison, however, in that it employs an automatic expansion valve instead of a high side float, and uses a short-stroke, long-bore reciprocating compressor rather than a rotary.

Three condensing unit models were used in Welsbach refrigerators. These were models 10, 20, and 25 with 5, 7, and 8⅓ lbs. of ice melting capacity per hour. Bore on all compressors is 3 in., while the stroke is ¾ in. on model 10 and 1 in. in models 20 and 25. Models 10 and 20 are designed to run at 300 r.p.m., while model 25 operates at 360 r.p.m.

All models employ the same size of V-belt. Model 10 has a ⅛-hp. motor, while the two larger compressors are driven by ¼-hp. motors.

Model 25 differs from model 20 only in motor pulley size and the suction line fitting. Model 10 and model 20 compressor parts are interchangeable except for drive shaft, piston, and cylinder. Model 10 compressor has a ring around the lubricating oil separator chamber, making it distinguishable from model 20 which has no ring.

Dimensions vary according to condenser used, but in household models are all about 24½ in. wide, 19¼ in. deep, and 18 in. high.

Ethyl chloride, the refrigerant, is slightly inflammable, burning with a lazy green flame like alcohol. Therefore, *neither matches nor any other open flames should be employed when searching for leaks*, nor should a system be broken down or purged when there is an open flame in the room.

The following table gives pressure-temperature relationships for ethyl chloride:

Pressures-Temperatures

T	V	T	P	T	P
	..	54.5	0.0	90	15.4
	..	55	0.3	91	15.9
	..	56	0.6	92	16.5
	..	57	0.9	93	17.0
	"30"	58	1.2	94	17.6
	29	59	1.5	95	18.2
	28	60	1.9	96	18.8
	27	61	2.3	97	19.3
	26	62	2.7	98	19.9
-17.5	25	63	3.1	99	20.5
-12.0	24	64	3.6	100	21.0
- 7.0	23	65	4.0	101	21.8
- 2.0	22	66	4.5	102	22.3
		67	4.9	103	22.9
2.5	21	68	5.3	104	23.7
6.5	20	69	5.8	105	24.3
10.6	19	70	6.2	106	24.8
14.3	18	71	6.6	107	25.5
17.7	17	72	7.1	108	26.3
20.8	16	73	7.5	109	26.9
23.7	15	74	7.8	110	27.5
26.4	14	75	8.3	111	28.1
28.9	13	76	8.7	112	28.6
31.3	12	77	9.1	113	29.2
33.6	11	78	9.6	114	29.9
35.8	10	79	10.1	115	31.6
37.9	9	80	10.4	116	32.3
40.0	8	81	10.9	117	33.1
42.0	7	82	11.4	118	33.9
41.0	6	83	11.9	119	34.7
45.9	5	84	12.4	120	35.5
47.8	4	85	12.9	121	36.3
49.6	3	86	13.4	122	37.1
51.3	2	87	13.9	123	37.9
52.9	1	88	14.4	124	38.7
54.5	0.0	89	14.9	125	39.5

Columns headed "T" indicate degrees Fahrenheit in the evaporator or at the liquid receiver. "V" signifies inches of mercury below atmospheric pressure (vacuum gauge readings), while "P" columns give pressure gauge readings in lbs. per sq. in *above atmospheric pressure.*

The cooling unit consists of a heavily tinned copper tank filled with a non-freezing solution of alcohol and water in which is submerged a coil of copper tubing. The outlet or low pressure end of the expansion valve is connected to this coil of copper tubing near where it enters the tank.

The outlet end of the coil of tubing is brought through the front wall of the tank near the bottom, and it is from here that the vapor return tubing is run to the compressor suction-connection. The thermostat for temperature control is mounted on the face of the cooling tank near the top.

The condensing unit consists of the compressor, and its motor drive, the condenser into which the compressed vapor is pumped, and a liquid reservoir or receiver into which the liquid runs from the condenser—all mounted on a welded steel frame. Various shut-off valves are included in the equipment.

The Welsbach compressor has a horizontal cylinder with a double acting piston actuated by Scotch Yoke drive. It operates as a vapor pump compressing ethyl chloride—the Welsbach refrigerant—into the condenser.

This compressed vapor condenses or liquefies as its heat is dissipated into the air blown over the condenser. The liquid falls to the bottom of the condenser and from there flows into the liquid receiver.

The compressor, of course, is the heart of the entire system. Except for the electric motor, it is the only part of the unit subject to mechanical wear. Instead of being driven by a conventional crank shaft through a connecting rod, the piston in a Welsbach compressor is actuated by an eccentric shaft. The piston itself is double acting.

Thus a single piston in one cylinder is compressing vapor in one end of the cylinder, while the other head of that same piston is on its suction stroke in the other end of the cylinder. There are, therefore, two compression strokes per revolution of the eccentric shaft.

Condensing Unit, Expansion Valve, and Control

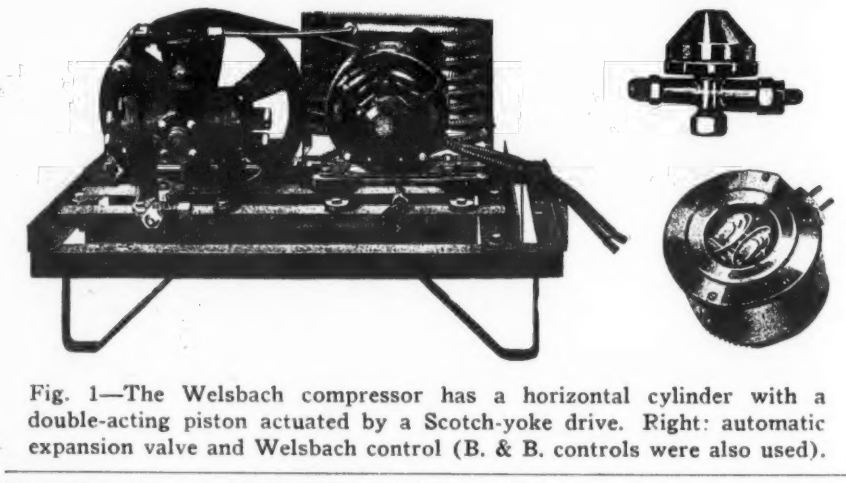

Fig. 1—The Welsbach compressor has a horizontal cylinder with a double-acting piston actuated by a Scotch-yoke drive. Right: automatic expansion valve and Welsbach control (B. & B. controls were also used).

Welsbach Service Data

Published herewith is descriptive information on Welsbach's electric refrigerator, written for service men. Next week the servicing of Welsbach controls and seals will be treated, and typical service calls analyzed with their remedies.

The compressor has a large bore and small stroke. It operates at low speed. Its piston is cast iron, hollow cored at both ends. Thus, it is sturdy and solid although at the same time relatively light in weight. At each end the piston carries rings. These are very closely fitted in the grooves in the piston. The piston is a very close fit in the cylinder.

The piston is driven by a crosshead through its center, actuated by an eccentric shaft. The piston, crosshead, and eccentric are accurately ground to a close fit with highly polished bearing surfaces.

The cylinder heads are also cast of semi-steel. They carry both the suction and the discharge valves.

The drive shaft is of drop forged steel—hardened and ground. The main bearings and the eccentric bearing are ground to a glass-like surface. The shaft runs in bearings machined in cast iron bearing caps.

To prevent undue circulation of the lubricant through the system, the compressor is equipped with a lubricant separator. This is in the top center of the cylinder casting, of which it is an integral part. It consists of a chamber 2½ in. high by 2 in. in diameter.

As compressed vapor is discharged from the cylinders, it enters this chamber through a short ½-in. brass tube. A spiral strip inserted in this tube imparts a whirling motion to the vapor as it is expelled into the lubricant separator.

The discharge port from the separator to the condenser is protected by an umbrella shaped baffle. The whirling vapor strikes this baffle.

Because the vapor is lighter than the mist of lubricant accompanying it, the vapor and the lubricant separate, the lubricant dropping back to the bottom of the separator and returning to the compressor, while the vapor passes up through the discharge port and into the condenser coils.

The Welsbach condenser is formed of ⅜-in. copper tubing, with spiral fins dipped in tin, wound in an oval and mounted on the condensing unit frame behind the motor. This assembly or general "layout" makes all parts readily accessible for quick and efficient service.

The condensing coil is connected at the upper end to the compressor, through the shut-off valve. The lowest turn of the coil is connected to the liquid receiver, which serves as a reservoir for the condensed ethyl chloride. Condensation of ethyl chloride is hastened and a low uniform temperature is insured, through the circulation of air by the motor fan.

The liquid receiver is made of 2-in. seamless brass tubing, 12 in. long. This is suspended beneath the condensing unit frame, in front of the electric motor. As ethyl chloride is liquefied, it flows by gravity from the condenser to this receiver, where it is stored and maintains a level sufficiently high to guard against the admission of vapor to the liquid line, which carries the liquid ethyl chloride to the expansion valve and freezing unit.

The condenser shut-off valve located on the top of the lubricant separator on the compressor controls the flow of ethyl chloride from the compressor to the condenser. It is fastened to the lubricating oil separator head by means of cap screws. (See Fig. 2 above.)

A circulating valve is placed at the discharge end of the receiver, controlling the flow of ethyl chloride

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Condenser Shut-off Valve

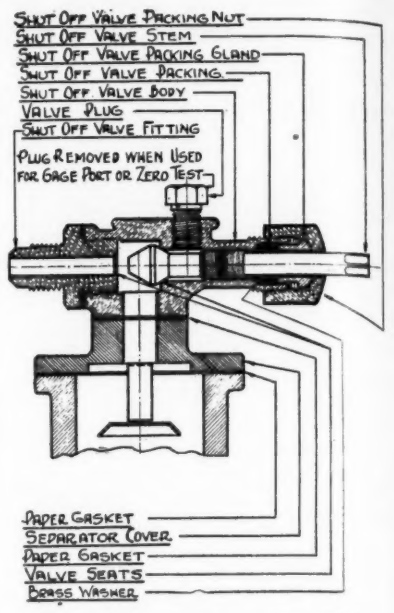

Fig. 2—Mounted atop the Welsbach oil separator is a condenser shut-off valve.

Receiver Circulating Valve

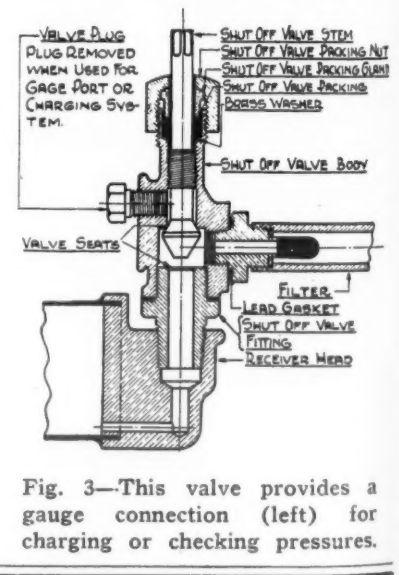

Fig. 3—This valve provides a gauge connection (left) for charging or checking pressures.

June 27 issue of Electric Refrigeration News will be another Air Conditioning Number

THE air-conditioning business is no longer a dream of the future. It is here today. The promotion and sales activities of public utilities, distributors, and dealers are surpassing forecasts made early in the year. From all indications 1934 installations will far exceed those made last year, both in number and in size.

Already there are a considerable number of refrigeration dealers selling air conditioning and many others are interested in in making suitable trade connections.

The news and information on air conditioning which ELECTRIC REFRIGERATION NEWS is regularly supplying to the field is helping these potential and present sales outlets to mold their opinions on various makes of equipment and the manufacturers behind them.

The June 27 issue of ELECTRIC REFRIGERATION NEWS will provide an effective background in which to present the merits of your equipment—to identify your product and company name with this new and growing business.

In this issue the editors will report the latest developments in air conditioning as described at the annual June meetings of the American Society of Refrigerating Engineers and the American Society of Heating and Ventilating Engineers. The issue will also report numerous installations of comfort cooling equipment made this season.

With the season already well under way and air-conditioning activity at its height, you will never have a better opportunity to create favorable impressions with the men who are selling and will sell your equipment.

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Servicing Welsbach Expansion Valves

(*Concluded from Opposite Page*)

between the condensing unit and the freezing unit and also providing a port through which the system may be charged with ethyl chloride and to which a pressure gauge may be attached for observing and checking operation. (See Fig. 3 below.) The body of this valve screws into the casting on the end of the receiver.

Note: The two valves mentioned above are of a three-way type—that

Compressor Inlet Valve

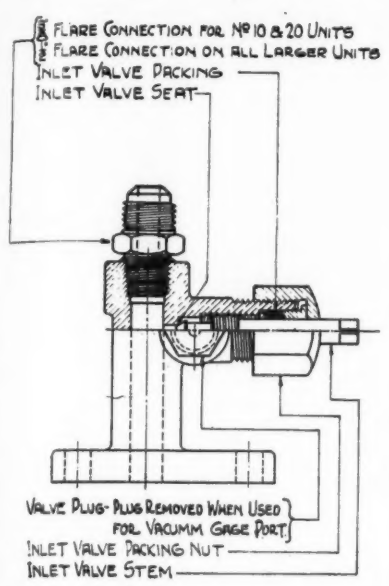
FLARE CONNECTION FOR Nº 10 & 20 UNITS
FLARE CONNECTION ON ALL LARGER UNITS
INLET VALVE PACKING
INLET VALVE SEAT
VALVE PLUG-PLUG REMOVED WHEN USED FOR VACUMM GAGE PORT
INLET VALVE PACKING NUT
INLET VALVE STEM

Fig. 4—Inlet valve on the Welsbach compressor, with a connection for reading the low-side vacuum.

is, there are three openings into the valve body of each. They are so designed and constructed that when the valve stem is turned all the way to the right the opening into the end of the valve is closed.

When the stem is closed all the way to the left, the small opening in the top of the valve is closed. The third opening into the valve cannot be closed by turning the valve stem. See Figs. 2 and 3.

A vacuum gauge port valve (called the *"inlet valve"*) is provided at the compressor intake. This makes it possible to attach a vacuum gauge for checking and observing the conditions prevailing on the low pressure side without disturbing the system.

This valve fitting is attached to the left hand cylinder head of the compressor, and provides a connecting link between the compressor and the tubing through which vapor is drawn from the chilling unit. This valve does not close off the suction line.

The expansion valve, or pressure reducing valve, used in the Welsbach system is another Welsbach-made product. This valve is automatic in operation and controls the flow of liquid ethyl chloride from the condensing unit to the freezing unit.

It admits ethyl chloride into the expansion coils of the freezing unit as rapidly as may be required to maintain ideal and pre-determined refrigerating conditions. It will neither admit more or less than is required at the moment.

At times it will suspend the flow of ethyl chloride entirely. At other times it regulates the size of the opening through which the ethyl chloride can flow, thus controlling exactly the rate at which it is admitted into the freezing unit.

Obviously the pressure of the gas entering this valve is greater than the pressure at which it leaves. There must be some point in the valve, therefore, which acts as a dividing wall between the two pressures. This is the gate or dam which controls the flow of the refrigerant.

It is a valve port which opens or closes by the movement of a metal ball. A spring tends to hold this ball against its seat, thus keeping the valve closed. A bronze stem passes through the valve port, however, and if the stem is depressed the ball is forced from its seat and liquid refrigerant is allowed to flow into the low pressure area.

Part of this low pressure area is bounded by a bronze plate attached to a copper sylphon or bellows. This sylphon is soldered gas tight to the head of the expansion valve.

The bronze stem which becomes part of this sylphon and plate assembly passes through the plate.

A coil spring, tending to lift this stem, tends also to compress the sylphon or bellows to compensate for the atmospheric pressure which otherwise would cause the bellows to expand unduly if a vacuum were drawn inside of the valve.

As the compressor draws vapor from the freezing unit, it reduces pressure throughout the expansion side of the system. This pressure reduction or partial vacuum within the system produces the same effect as if external pressure were exerted upon the bronze plate.

Operation of the Valve

In other words, the bronze plate is forced downward. The stem which passes through the valve port is, of course, forced down with the plate to which it is attached. This pushes the ball away from its seat and allows ethyl chloride to flow through the port.

As the ethyl chloride boils and tends to raise the pressure on the outlet side of this dividing port, the force with which the bronze plate is depressed gradually diminishes; the ball again approaches the seat, thus reducing the flow of ethyl chloride.

In this way the perfect balance is maintained at all times and ethyl chloride can flow to the freezing unit no faster than it absorbs heat, boils, and is removed by the compressor. This expansion valve is accurate in action at all times.

It is *highly important* that careful study be given to the functioning of both the expansion valve and the thermostat. These two parts automatically control the temperatures produced. The conditions under which the system operates may be varied through the adjustment of either or both of these assemblies.

Although it is the thermostat that actually makes and breaks the electric circuit, proper setting of both the thermostat and the expansion valve are necessary to dependable automatic operation. Obviously, the thermostat cannot interrupt the electrical circuit if it is set to disconnect at a lower temperature than is produced by the setting of the expansion valve.

The temperature at which ethyl chloride boils, of course, depends entirely upon the pressure or vacuum to which it is subjected. The vacuum must be regulated so that the boiling temperature is always below that at which the thermostat will interrupt the electrical circuit. If the expansion valve is so adjusted that the vacuum is either too high or too low, satisfactory operation cannot be maintained.

Expansion Valve

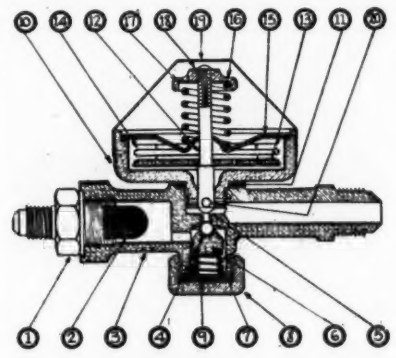

Fig. 5—Welsbach's automatic expansion valve, with parts numbered for the description below.

The operation of the Weisbach expansion valve is described as follows:

The nipple (1) to which the liquid delivery line is affixed, has fastened to it a screen (2) of mesh so fine that even small particles of dirt cannot pass this point and thus interfere with the proper functioning of the expansion valve. This assembly is screwed into the valve tee or body (3), the junction being made tight by the use of a lead gasket.

A hard steel ball (4) is held against a seat or opening (5) in the valve body by the pressure of a spring (6) against ball retainer (7). These parts are held in place by the cap (8) which is also made tight to the valve body by a copper disc (9).

To the valve body (3) is screwed a cup shaped body (10)—another lead gasket (11) insuring a leak-proof joint. Fitting loosely through the opening in the center of valve cup (10) is spindle (12), which extends into the valve seat opening (5) of valve body (3), almost touching ball (4).

To a shoulder of stem (12) is soldered a disc (13), which on its outer edge is soldered to a short sylphon or flexible metal bellows (14). The other end of the bellows (14) is soldered to the valve cup (10).

On the rim of the cup (10) is a disc or a spider (15), so shaped that its depressed center acts as a seat for the spring (16), which at its upper end is capped by a spring washer (17), and which is pressed against a knurled adjusting nut (18) on the upper end of spindle (12).

A cover (19) caps the entire assembly and shields same from the rapid accumulation of atmospheric moisture. The natural tendency for the spring (16) to force the stem (12) upward is resisted by the stop-pin (20) crosswise in spindle (12), striking the valve cup body (10).

Upon installation,before the expansion valve cover (19) is put in place, the pocket formed by bellows (14) and plate (13) must be filled with pure Nujol, so that any atmospheric moisture which might condense within this pocket will not freeze and cause the valve stem or spindle (12) to stick.

In addition to its connection with the liquid delivery line at the fitting (1), the opposite end of the valve body (3) is connected to the freezing unit expansion coil inlet near the top of the freezing unit.

After the compressor starts, its suction is communicated to and reduces the pressure in the chamber between the expansion valve sylphon and the body.

Because of the change in balance between external atmospheric pressure on one side and the combination of spring pressure and pressure of refrigerant on the other side, the disc and therefore the stem carrying it will move down against the compression of the upper spring until the reduced pressure in the chamber is compensated by the increased pressure of the spring.

As the pump continues to reduce the pressure, the stem continues to move down until it pushes the ball down off its seat. This will admit refrigerant from the high side which is below the ball to the low side which is above it.

This liquid refrigerant, in evaporating in the coils of the low side, slightly raises the pressure in the low side and thus permits the spring to raise the stem and the valve to close.

In practice the stem will push the ball down just far enough to admit as much refrigerant in liquid form as the pump can move when vaporized. A constant pressure (or "vacuum," as we call it when it is less than the pressure of the atmosphere) will thus be maintained on the low side.

If for any reason the pump permits the vacuum to fall, the valve will close partly and restrict the flow of refrigerant. If the pump increases the vacuum, the valve will open wider and admit more refrigerant—therefore bringing the vacuum back to normal. Thus the vacuum is balanced by the spring pressure.

If it is desired to change the vacuum, it is done by adjusting the pressure on the spring by means of the knurled adjusting nut (18). If a higher vacuum is desired, the nut is tightened down; if a lower vacuum, then it is loosened up.

In making expansion valve adjustments, only a part of a turn should be taken on the adjusting nut at a time, and ample time should be allowed for the system to regain its equilibrium.

It is usually possible to make a lower vacuum adjustment quicker than a higher one. A half turn of the nut will usually produce an inch change in vacuum.

The proper setting of the expansion valve for domestic cabinets is between 19 and 21 in. The lower the vacuum the more economical will be the operation and the unit will run less frequently. The vacuum should not be set so low, however, that the return line will frost back beyond where it leaves the cabinet. This should be observed toward the end of the operating period.

Expansion valves should receive their final adjustment after the unit has cooled down to operating temperature. Adjustments made on warm tanks are not correct after the unit has cooled.

Sometimes foreign matter gets between the ball and seat with the result that too much refrigerant passes and the vacuum falls. Frequently the particle that is holding the valve open can be dislodged by flushing the expansion valve. This is done when the machine is running by pressing the stem down. This pushes the ball well off the seat and the rush of refrigerant removes the obstruction.

In case flushing the expansion valve does not remove the particle that is keeping the ball from seating, the nut (8) should be removed; the spring (6), ball retainer (7), and ball (4) taken out and cleaned. Any particles that may be on the seat should also be wiped off.

Of course the machine cannot be in operation when this is being done, nor can this be done until pressures are balanced to prevent the escape of liquid refrigerant. Replace the parts when cleaned and start machine. If dirt between the ball and seat was responsible for the low vacuum, its removal will allow the expansion valve to function properly and no adjustment need be made if this was not changed before cleaning.

Regardless of the vacuum gauge reading the vacuum is too low if the ¾-in. vapor return or suction line is frosted more than 8 in. from the point where it emerges from the bottom of the freezing unit. Similarly the vacuum is too high if this line is not frosted at least 3 or 4 in. from the point where it emerges from the bottom of the freezing unit.

In this review the term "high vacuum" means a high reading of the vacuum gauge. A "low vacuum" means a low reading of the vacuum gauge. Thus a high vacuum signifies a very low pressure and a low vacuum signifies a somewhat higher pressure though one that is below atmospheric pressure.

NOTE: Whenever glycerine is found in an expansion valve cup (installations prior to the Fall of 1928) wipe it out and replace with Nujol.

Referring to the pressure-temperature values given in the chart above, it must be remembered that while a higher vacuum produces lower temperatures, *it also reduces the quantity of refrigerant circulated and therefore the refrigerating capacity of the system.*

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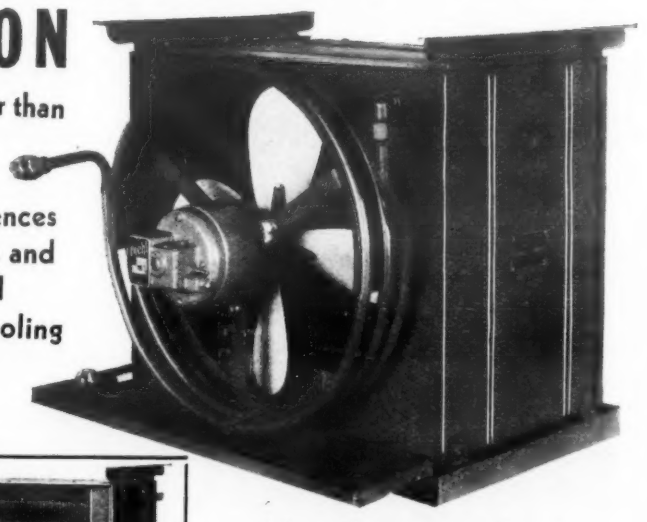

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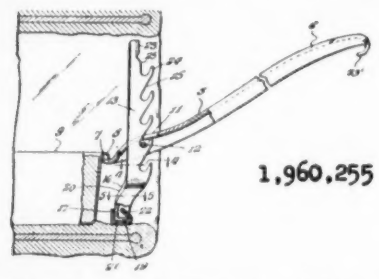
PATENTS

Issued May, 29, 1934

1,960,255. DEVICE FOR REMOVING FROZEN ICE TRAYS. Herbert H. Tyroff, San Antonio, Tex. Application Feb. 14, 1933. Serial No. 656,767. 7 Claims. (Cl. 254—130.)

1. A device of the class described comprising a standard substantially U-shaped in cross section and provided with a



1,960,255

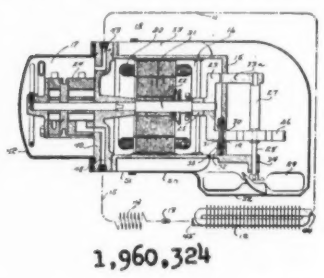
series of vertically disposed notches, an operating lever fulcrumed on the standard and provided with a transverse pin adapted to engage a selected notch in the standard, and stop ears formed on the standard to prevent accidental separation of said standard and lever.

1,960,305. RADIATOR SPIRAL COIL TUBE. Willard O. Emmons, Lockport, and Joseph Williams, Medina, N. Y., assignors, by mesne assignments, to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application Aug. 10, 1933. Serial No. 684,498. 4 Claims. (Cl. 257—262.)

1. In a heat exchanger, a tube and a fin comprising a succession of flat sided loops of flat ribbon each flat sided loop having one of its flat sides in engagement throughout its area with the tube.

1,960,324. ELECTRIC MOTOR UNIT. Harry R. Van Deventer, New York, and Samuel C. McKeown, Mount Vernon, N. Y., assignors, by mesne assignments, to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application Sept. 23, 1929. Serial No. 394,420. 3 Claims. (Cl. 172—36.)

1. A fluid tight casing, a diaphragm in said casing, a motor in the casing having an axis of rotation, a fan outside of said



1,960,324

casing having an axis of rotation, and magnetic members connected to said motor and fan, and adapted to influence each other through said diaphragm whereby the movement of the motor is imparted to the fan, means supporting the fan with its axis out of alignment with the axis of the motor, the axis of the motor intersecting the axis of the fan substantially at right angles.

1,960,368. ARTIFICIAL REFRIGERATION. Harold Simmons Booth and Gilberta G. Torrey, Cleveland Heights, Ohio. Application May 25, 1931. Serial No. 539,658. 4 Claims. (Cl. 252—5.)

1. A chemical system for an absorption type refrigerator comprising sulphur dioxide as a refrigerant medium and an organic beryllium compound as an absorption medium.

1,960,433. METHOD OF AND APPARATUS FOR CONTROLLING THE FLOW OF REFRIGERANT. Ransom H. Beman, Detroit, Mich., assignor to Mullins Mfg. Corp., Salem, Ohio, a corporation of New York. Application Jan. 16, 1930. Serial No. 421,133. 9 Claims. (Cl. 62—8.)

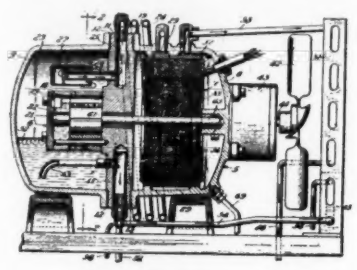
4. A refrigerating system of the type having an evaporator, and means for supplying compressed refrigerant to the evaporator and withdrawing the refrigerant gases from the evaporator, comprising in combination a unit for controlling the flow of refrigerant into the evaporator, and means actuated by a differential pressure produced in the exhaust line relative to the pressure in the evaporator for actuating said unit.

1,960,471. REFRIGERATION SYSTEM. William E. Zieber, York, Pa., assignor to York Ice Machinery Corp., York, Pa., a corporation of Delaware. Application Sept. 15, 1932. Serial No. 633,343. 14 Claims. (Cl. 62—3.)

1. In a refrigeration system including a condenser, a liquid feed line, and a plurality of evaporators; means in said feed line controlling flow of refrigerant from said condenser to said evaporators; a relief valve responsive to a predetermined pressure and interposed in the feed line between said flow controlling means and one of the evaporators; and means connecting another of said evaporators with said feed line, said last-mentioned means being connected to the feed line intermediate the flow controlling means and the relief valve.

1,960,576. REFRIGERATING SYSTEM. James H. Dennedy, Evansville, Ind., assignor to Rotorite Corp., Detroit, Mich., a corporation of Illinois. Application May 15, 1932. Serial No. 633,343. 14 Claims. (Cl. 62—115.)

1. In a refrigerating system in combination, a sealed casing including a compressor compartment and a motor compartment, a compressor and a motor in their respective compartments operably connected together, said compressor being adapted to receive low pressure gas from outside said casing and compress it, discharging it under high pressure into said compressor compartment, a preliminary cooler communicating with said compressor compartment and adapted to discharge commingled, compressed gas-



1,960,576

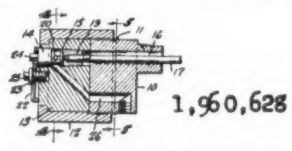
eous and condensed refrigerant into the motor compartment for cooling the motor, and a condenser communicating with said motor compartment for fully liquefying gas discharged therefrom.

1,960,623. REFRIGERATING SYSTEM. Harry D. Edwards, Larchmont, N. Y., assignor to The Linde Air Products Co., a corporation of Ohio. Application May 9, 1931. Serial No. 536,248. 5 Claims. (Cl. 62—136.)

1. The method of operating a refrigerating system for producing low temperatures of a character adapted for the preparing of oxygen having compressor means for compressing a gaseous medium to a relatively high pressure in a plurality of stages and an expansion motor in which the highly compressed medium expands doing external work to achieve a refrigerating effect, which consists in applying the energy of the medium expanding in said motor to hold over through inertia and drive certain of said stages, and applying energy derived from an independent source to drive the remainder of said stages.

1,960,628. CHANGE VALVE AND SEAT FOR MECHANICAL REFRIGERATION. Charles M. Goodland, Rock Island, Ill. Application July 29, 1932. Serial No. 625,963. 1 Claim. (Cl. 277—24.)

A valve of the kind described comprising inner and outer sections adapted for abutting relation to each other, the inner



1,960,628

section being externally threaded for the mounting of the same with respect to a fluid source, the outer section forming a rotary valve and being reduced at its outer end, a collar receiving the outer and inner sections and threaded with the latter and having an outer open front for receiving the reduced outer end of the outer section, a plug-like valve seat removably fitted in the outer section and having a turning stud at its lower end projected beyond the reduced outer end of the outer section, a needle valve in said seat for controlling a port through said seat and for coaction with a float arm, the said outer and inner sections having passages controlled by the outer section, and means on the outer section and engaged with the removable seat to hold it fitted in the outer section and also to expose the turning stud of said seat.

1,960,714. WATER COOLER. Harry B. Rock, Los Angeles, Calif., assignor to California Consolidated Water Co., Los Angeles, Calif., a corporation of Delaware. Application April 19, 1932. Serial No. 606,105. 3 Claims. (Cl. 62—91.)

1. In a water cooler, a reservoir, a porous sleeve surrounding said reservoir and extending to the top thereof, a shield surrounding said reservoir and spaced therefrom, a cover for said shield and water receiving means in said cover in communication with said sleeve.

1,960,747. REFRIGERATOR CONTAINER. Robert Wallace Marks, McGehee, Ark. Application May 24, 1933. Serial No. 672,684. 4 Claims. (Cl. 220—94.)

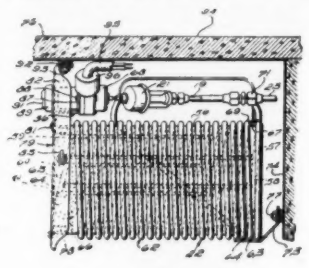
1. In a device of the class described, a container having a flange at its lower end depending below the bottom thereof, said flange having openings therein, straps passing under the body and through said openings and up along the sides of the body, a ring spaced from the top of the container, with the upper ends of the straps extending inwardly over the upper end of the container and connected with said ring, and a handle connected with the ring.

1,960,745. MEASURING INSTRUMENT. George P. Luckey, Lancaster, Pa., Application July 15, 1930. Serial No. 468,152. 5 Claims. (Cl. 73—110.)

2. An indicating instrument comprising a casing, a dial carried thereby having a scale thereon, a base member in said casing, a diaphragm carried by said base member, a shaft journaled in said base member and disposed perpendicular with respect to the base of said diaphragm, a pointer formed with an elongated slot carried by said shaft and cooperating with said scale, a rock shaft having a flattened portion intermediate its ends mounted for oscillatory movement and disposed at right angles to said pointer shaft, a finger fixed to said rock shaft and engaging with the slot in said pointer to move said pointer angularly, and means to adjust the pointer to correspond exactly with the zero setting of the scale on said dial, said means comprising a support on said diaphragm, an arm adjustably carried by said support, the free end of said arm being in engagement with the flattened portion of said rock shaft and movable toward and away from the axis of said rock shaft, said support being adjustably mounted on said diaphragm whereby said support of said arm may be raised or lowered relative to said rock shaft in adjusting said pointer to correspond with the zero setting of said scale.

1,960,796. REFRIGERANT EVAPORATOR. John R. Replogle, Detroit, Mich., assignor, by mesne assignments, to Copeland Refrigeration Corp., Mount Clemens, Mich., a corporation of Michigan. Application Dec. 14, 1931. Serial No. 581,037. 12 Claims. (Cl. 62—126.)

9. A refrigerating system comprising an evaporating unit having a pair of conduits wound to form a double thread, said conduits at one end of said unit be-



1,960,796

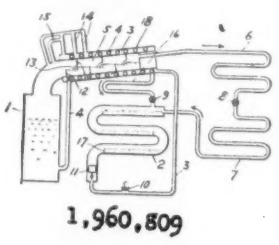
ing connected together for open communication between them, means for supplying liquid refrigerant to the opposite end of one of said conduits, and means for conveying refrigerant from the opposite end of the other of said conduits.

1,960,802. REFRIGERATION. Sigurd Mattias Backstrom and Gosta Gregorius Lennmor, Stockholm, Sweden, assignors, by mesne assignments, to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Application March 28, 1929. Serial No. 350,475. In Germany March 30, 1928. 16 Claims. (Cl. 62—4.)

1. Refrigerating apparatus comprising an evaporator, energy control means for the apparatus, means to actuate the energy control means including a chamber having a flexible wall portion, a bulb and a conduit connecting said chamber with said bulb, said bulb, conduit and chamber containing a fluid of such nature as to freeze and melt within the working range of temperature, and said bulb being positioned with a portion thereof in direct heat transfer relationship with the evaporator and a portion in heat transfer relation with surrounding air.

1,960,809. REFRIGERATING APPARATUS. Sven Alfred Bertil Dahlgren, Alsten, Sweden, assignor, by mesne assignments, to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Application Sept. 25, 1931. Serial No. 565,048. In Sweden Feb. 25, 1931. 7 Claims. (Cl. 62—119.)

1. A refrigerating apparatus of the absorption type comprising a boiler, an absorber, a conduit for rich solution be-



1,960,809

tween the absorber and the boiler, a conduit for vapors connected with the boiler, a conduit for weak solution connected with the boiler, the last two named conduits being in heat exchange relation with the first named conduit, and walls within the heat exchange portion of said conduit for vapors adapted to so maintain a plurality of pools of condensate formed by the cooling of vapors as to force vapors to flow through said pools of condensate in series.

1,960,821. REFRIGERATION. Guido Maiuri and Raoul Felice Bossini, London, England, assignors, by mesne assignments, to Electrolux Servel Corp., a corporation of Delaware. Application July 1, 1930. Serial No. 465,080. In Great Britain July 6, 1929. 23 Claims. (Cl. 62—119.5.)

1. The process of refrigeration which comprises introducing a liquid refrigerant into the presence of an inert gas, evaporating the refrigerant, producing flow of the resulting gaseous mixture to a higher level, introducing into said gaseous mixture at the higher level a vapor having a greater specific weight than said inert gas, producing flow of the resulting heavier gaseous mixture downwardly, cooling said heavier gas mixture in its downward flow, absorbing the refrigerant and the heavy vapor, and producing flow of the inert gas back to the point of introduction of refrigerant.

1,960,824. REFRIGERATION Carl Georg Munters, Stockholm, Sweden, assignor to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Application Dec. 13, 1929. Serial No. 413,706. In Germany May 3, 1929. 30 Claims. (Cl. 62—118.)

9. That improvement in the art of refrigeration which comprises heating a solution to expel a refrigerant vapor therefrom, reducing the temperature of said vapor in order to liquefy it, passing the liquefied refrigerant to an evaporator, preventing the condensation of vaporous refrigerant in the evaporator by utilizing a fluid which is substantially insoluble with respect to the refrigerant, reducing the temperature and pressure of said solution, absorbing refrigerant vapor due to said reduced temperature and evaporating liquid refrigerant due to reduced pressure resulting from said absorption.

1,960,911. REFRIGERATOR. Thomas J. Kavanaugh, St. Louis, Mo., assignor to Hussmann-Ligonier Co., St. Louis, Mo., a corporation of Delaware. Application April 29, 1932. Serial No. 608,185. 10 Claims. (Cl. 62—37.3.)

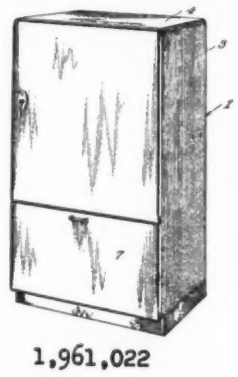
1. A refrigerator comprising a casing, means within said casing for supporting articles of food therein, an ice chamber within said casing, air-moving means for forcing air through said ice chamber and moving same through said casing, means for controlling the course of said air, an ice-receiving receptacle, means for movably attaching said ice-receiving receptacle to said casing so as to permit movement thereof into and out of said ice chamber, and a drip pan associated with said ice receptacle and arranged to discharge water resulting from the melting ice within said ice receptacle into the ice chamber when the ice receptacle is extended outwardly of said ice chamber.

1,960,975. WATER COOLER AND FILTER. Balthazar H. T. Mulch, Westwood, N. J. Application June 23, 1932. Serial No. 618,829. 9 Claims. (Cl. 210—101.)

1. A water cooler and filter comprising, in combination, a container, a tank positioned within said container in spaced relation thereto, a bed of filtering material within said tank, a cooling coil arranged within the space between the container and tank and adapted to cool the filter bed in the vicinity of the wall of the tank, said cooling coil being located in close proximity to the walls of the tank and adapted to receive a refrigerant of low temperature to effect freezing of water along the inside surface of the tank and thereby form an ice seal along the sides of the filter bed at such tank, a conduit for delivering water to the top of said filter bed, and a conduit for withdrawing the cooled and filtered water.

1,961,022. REFRIGERATOR CONSTRUCTION. Jacob Teller, New Rochelle, and Arthur P. Schulz, New York, N. Y., assignors to Teller Stove Designing Corp., New York, N. Y., a corporation of New York. Application March 24, 1932. Serial No. 601,024. 2 Claims. (Cl. 20—35.)

1. A refrigerator structure comprising a body having a plurality of compartments in superposed relation, and having a



1,961,022

front surface frame surrounding each of said compartments, a door for each of said compartments, said doors being in substantially abutting relation at their adjacent edges, and together extending to the side marginal edges of the refrigerator body, and overlying and completely covering said front surface frame.

1,961,069. FREEZING APPARATUS. Edward Joseph Murphy, Lynbrook, N. Y. Application Nov. 16, 1931. Serial No. 575,367. 4 Claims. (Cl. 62—95.)

1. In a freezing apparatus, a pan, a refrigerating coil disposed in said pan and composed of a tubular conductor carrying a refrigerant, the sections of said coil having flat top faces all disposed in a common plane with the adjacent edges of the sections in close proximity to each other, and a loose refrigerant in the pan in contact with the sections of the coil below the flat top faces.

1,961,070. FREEZING APPARATUS. Edward J. Murphy, Lynbrook, N. Y. Application Dec. 14, 1931. Serial No. 581,006. 6 Claims. (Cl. 62—102.)

1. In freezing apparatus, a cabinet, a plurality of vertically spaced, horizontal coils in said cabinet and plates adjacent said coils and arranged in staggered relation to provide a sinuous path for air, and snap clamping means for securing said plates to said coils.

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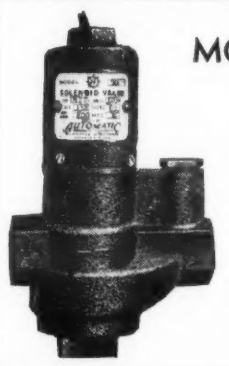

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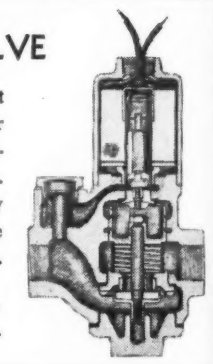

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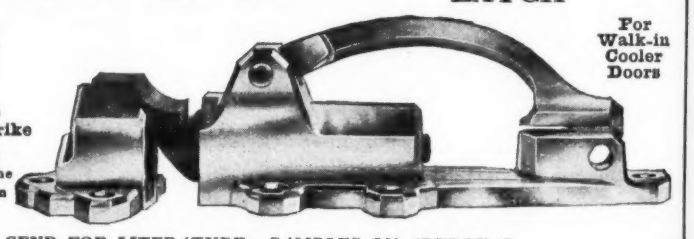

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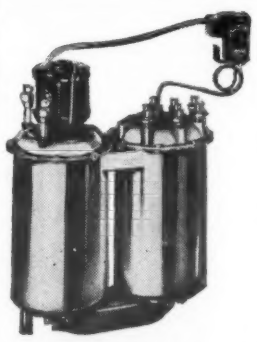

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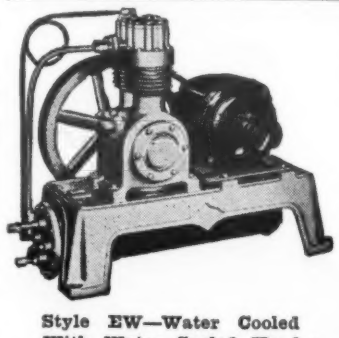

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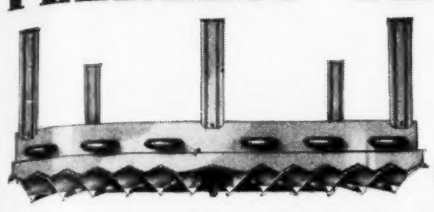

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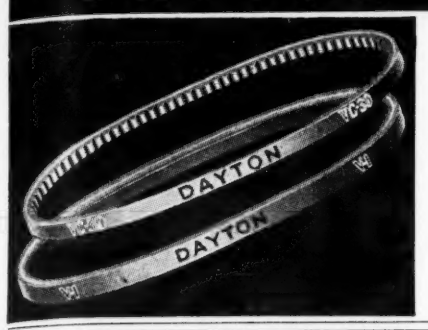

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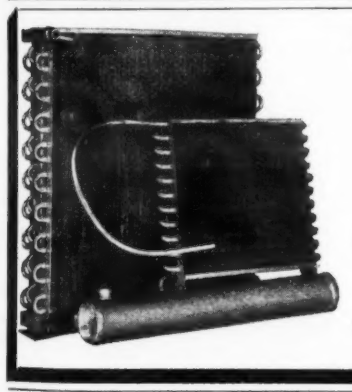

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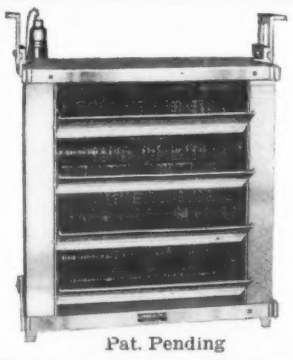

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The above rates apply only to United States and Possessions and Pan-American Postal Union Countries. Rate for Canada—Directory, $6.00; News, $6.00; Combination, $11.00. Rate for all other foreign countries—Directory, $5.00; News, $5.00; Combination, $9.00.

6-13-34

QUESTIONS

Coin-Operated Beer Coolers

No. 1659 (Distributor, West Virginia)—"We have a customer who is inquiring for a beer cooler of a type that serves beer automatically when a coin is inserted. We do not have any information on a beer cooler like this, and would appreciate your advice as to whom manufactures such a product."

Answer: The following companies manufacture a coin-operated *bottle* beer cooler:
Crosley Radio Corp., Cincinnati, Ohio.
Glascock Bros. Mfg. Co.
Fifth St. & Perkins Ave., Muncie, Ind.
S & S Products Co., Lima, Ohio.

Zerozone Ice Trays

No. 1660 (Distributor, Ohio)—"As former distributor of Zerozone, we have immediate need for four trays with chromium-plated fronts, 11¾ in. long, 5⅜ in. wide, and 1½ in. deep. We have been trying to secure these trays through Winslow, Baker, Meyering Corp., but have been unsuccessful.

"We have also written a number of tray manufacturers listed in your REFRIGERATION DIRECTORY. Can you advise us as to Zerozone's former source of supply on these trays?"

Answer: According to our information there were very few parts and accessories left for the bankruptcy sale conducted on Zerozone.

The new company, Zerozone Refrigeration Corp. of Mt. Clemens, Mich., which is to continue the business, advises us that they are endeavoring to secure these trays for you, and will communicate with you shortly.

In the meantime, if any reader has any information on this question, we will be glad to forward it on to you.

The Electric Home

No. 1661 (Utility company, Texas)—"In one of your recent issues we noted reference to a book entitled "The Electric Home" by E. S. Lincoln, published by the Electric Home Publishing Co. of New York. A letter addressed to this company has been returned to us unclaimed, and we would like very much to know if you can give us the correct name and address?"

Answer: Electric Home Publishing Co., 230 Park Ave., New York, N. Y.

Refrigeration Sales Charts

No. 1662 (Manufacturer, New York)—"From time to time you have published charts showing the seasonal fluctuation of refrigerator sales over a period of years. One such appeared in your Dec. 13, 1933, issue on page 10. Have you published anything more recent than this?"

Answer: Yes, see the new 1931 REFRIGERATION DIRECTORY AND MARKET DATA BOOK which give complete, charted information on refrigeration sales through 1933.

Canadian Franchise

No. 1663 (Distributor, Quebec)—"As subscribers to your paper, we wonder if you could put us in touch with some American manufacturers which do not have representation in the Province of Quebec, and would be interested in arranging such a connection. We have been in the refrigeration business for quite some time, and have exceptionally good connections over the entire province."

Answer: The NEWS will gladly forward the name of this inquirer to any manufacturer interested.

Refrigeration Motor Data

No. 1664 (Manufacturer, New York)—"We have a copy of your REFRIGERATION DIRECTORY, and note with interest the specifications section which gives certain information on motors used by the various refrigerator manufacturers. Since some of the specifications given in that book do not cover the latest models, we are wondering if you have any data covering all new models. We are particularly interested in the type and make of motor being used in refrigerators now in production."

Answer: Latest information on 1934 models is published in the specifications section of the May 30 issue of the NEWS.

Appliance Statistics

No. 1665 (Distributor, Utah)—"We are desirous of obtaining some information regarding electric refrigeration, radios, and washing machines, and you have been recommended to us as being in a position to furnish this information.

"If you have anything of this nature that would be of value to a wholesale house, please acquaint us with it. If this is not in your line, possibly you can advise me of the proper place to apply for same."

Answer: The 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK contains yearly sales of washing machines, radios, ironers, oil burners, and vacuum cleaners, both tabular and chart form.

Service on Sealed Units

No. 1666 (Texas)—"We are specializing in the service of sealed unit refrigerators such as Majestic, General Electric, and Servel and we would appreciate any information as to where we could obtain supplies, parts, and service information on these units—if there is any such information available."

Answer: We know of no source other than the manufacturers of these complete refrigerator units.

Refrigerator Sales

No. 1667 (Chemical manufacturer, California)—"Can you give me the number of new ice refrigerators that were sold to the trade in the calendar year 1933?

"Do you publish anything that gives information relating to the sales of all kinds of refrigerators? Also can you supply a comprehensive list of ice delivery companies—those delivering to the domestic consumer?"

Answer: According to the 1934 REFRIGERATION DIRECTORY, 250,000 ice refrigerators were sold during the period July, 1932, to July, 1933. A report covering the calendar year was not available. The DIRECTORY shows sales of household and commercial electric refrigerators as well as of ice refrigerators for past years.

The *Refrigeration Blue Book*, formerly published by Nickerson & Collins Co., 435 N. Waller St., Chicago, listed all ice companies, but this book has not been revised for several years.

Frostoff's Address

No. 1668 (Manufacturer, Illinois)—"As one of your advertisers in ELECTRIC REFRIGERATION NEWS, could we request your help in the following:

"I have heard that there is an automatic defrosting mechanism on the market which is known as 'The Defroster' or some similar name. I would very much like to know the name and address of all manufacturers of this device, and would appreciate a collect telegram giving this information."

Answer: Frostoff Co., 272 North Ave., New Rochelle, N. Y.

Specifications Data Missing

No. 1669 (Dealer, Illinois)—"As subscribers to your paper, we read it promptly when it comes in, and find it of great value in selling Frigidaires.

"We have a good deal of competition on the Coldspot refrigerator sold by Sears Roebuck, and I do not find specifications on the various Coldspot models given in your paper. Would it be possible to secure these data?

"Also, we note that the ice melting refrigeration capacity on Westinghouse refrigerators is omitted, and the same information is not given for Norge, nor for the standard line of Frigidaire.

"This information would be of great value to me, and I hope that it is available. I have read your paper for the past three years and like it fine."

Answer: We have published a revised set of specifications (issue of May 30) since your letter, and you will find that these give Norge ice melting capacities. However, the other information you request is still missing. The manufacturers simply declined to furnish it. Sears Roebuck promised to furnish Coldspot specifications but the data has not yet been received.

Expanded Rubber

No. 1670 (Exporters, New York)—"We are interested in the export of refrigerators and refrigeration material. Our contacts abroad report that trials have been made with new types of insulating material such as corkboard, expanded rubber, aluminum foil, etc.

"We are wondering if you could put us in touch with manufacturers of expanded rubber for such insulating material?"

Answer: All new developments in refrigeration insulation have been reported in ELECTRIC REFRIGERATION NEWS. Expanded rubber, the newest material to be considered for insulation, was described by Harry Edwards before the December meeting of the American Society of Refrigerating Engineers, and reported in the Dec. 13, 1933, issue of the NEWS.

At that time this material was being produced only in England (under the trade name Onazote). For information on recent progress with expanded rubber in this country we suggest you direct an inquiry to Mr. Edwards at the Carbide & Carbon Chemicals Corp., 30 E. 42nd St., New York, N. Y.

Mohawk's Refrigerant

No. 1671 (Service company, Ohio)—"We have a Mohawk model No. 4, serial R12429, refrigeration unit in for repairs. It is in need of refrigerant, and we do not know what kind is used nor the amount. It is not sulphur dioxide. Can you tell us?"

Answer: The 4-cu. ft. Mohawk refrigerator, manufactured by the Wurlitzer Mfg. Co. of North Tonawanda, N. Y., should have a charge of 1½ lbs. of *methyl chloride*.

Electrolux Gas

No. 1672 (Distributor, Virginia)—"Will you kindly furnish us with information on the new Electrolux gas refrigerator as to the approximate amount of gas consumed per month (in cubic feet), the pressure of refrigerant during the on cycle, and the gas or gases used as refrigerant?"

Answer: Ammonia and methyl chloride are the two refrigerants used in the new air-cooled Electrolux. We have no official data on the gas consumption of the various models but no doubt it varies considerably with the quality of gas in different communities.

CLASSIFIED

PAYMENT in advance is required for advertising in this column.

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

POSITIONS AVAILABLE

COMPETENT, reliable sales engineer selling commercial refrigeration to chain accounts and dealers in Middle West, to represent a new and proven refrigerator accessory developed in connection with a nationally known organization. The product is revolutionary in performance and unconditionally guaranteed. Salary and commission. Box 627.

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WANTED intelligent business men to make small investment for large profits selling repossessed and reconditioned refrigerators, standard makes, for one of the largest wholesale jobbers in America. 10,000 refrigerators available. Territories still open. Wonderful opportunity for the right people. Several hundred new refrigerators in crates, attractive prices. Your inspection invited. Keystone Refrigerator Exchange, Inc., 479 First Ave., New York City.

INDEPENDENT SERVICE COMPANIES

GUARANTEED thermostat repair service. B and B, G. E., Cutler-Hammer, Penn, Ranco, Tag., etc. Regrind and polish float valve needles ten cents per needle, $1.00 minimum charge. Expansion valves repaired. Gas service, Methyl, Ethyl, Sulphur, Iso-butane and others. Any amount, your cylinder or ours. Competitive prices. Halectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

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